TRI-DAM PROJECT

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HEARING

BEFORE THE

SUBCOMMITTEE ON IRRIGATION AND RECLAMATION

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

EIGHTY-THIRD CONGRESS

SECOND SESSION

ON

S. 3040

A BILL TO PROVIDE FINANCIAL ASSISTANCE TO THE OAKDALE AND SOUTH SAN JOAQUIN IRRIGATION DISTRICTS, CALIFORNIA, IN THE CONSTRUCTION OF THE TRI-DAM PROJECT

JULY 2, 1954

Printed for the use of the Committee on Interior and Insular Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
49707 WASHINGTON : 1954

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TRI-DAM PROJECT

FRIDAY, JULY 2, 1954

UNITED STATES SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS,
Washington, D. C.

The subcommittee met, pursuant to call, at 10 a. m., in room 224, Senate Office Building, Hon. Guy Cordon presiding.

Present: Senator Kuchel.

Senator CORDON. The committee will come to order.

The subcommittee meets this morning pursuant to call to consider S. 3040, which is a companion to House Joint Resolution 330. I now must leave to go to the Appropriations Committee. Senator Kuchel will handle the hearing. The record will be made and it will be some little time, but as soon as possible the subcommittee will have its report before the full committee.

Senator KUCHEL. The meeting will come to order.

As acting chairman, I would first like to make a brief statement concerning S. 3040, which is a companion measure to House Joint Resolution 330, introduced by my friend and colleague from California, Congressman Leroy Johnson.

(The bill referred to follows:)

[S. 3040, 83d Cong., 2d sess.]

A BILL To provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, California, in the construction of the Tri-Dam project

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That as used in this Act, the term "Tri-Dam project" means the multiple-purpose irrigation and hydroelectric project on the Stanislaus River in California, jointly undertaken by the Oakdale and the South San Joaquin Irrigation Districts (agencies of the State of California), and presently licensed by the Federal Power Commission under projects numbered 2005 and 2067. Such project to be constructed and operated under the laws of the State of California.

SEC. 2. There is authorized to be appropriated—

(1) not more than $10,370,000 which shall be available for a loan without interest by the United States, acting through the Secretary of the Interior, to the Oakdale and South San Joaquin Irrigation Districts, California, jointly: *Provided*, That such loan shall not exceed that portion of the estimated cost of constructing the Tri-Dam project which the said Secretary determines to be equitably allocable to irrigation; and

(2) a grant by the United States, acting through the Secretary of the Army to said districts jointly, of an amount equal to that portion of the estimated cost of constructing the Tri-Dam project which the Secretary of the Army determines to be equitably allocable to flood control. If the sum of the loan and the grant exceed $10,370,000, the excess of the grant shall be credited on the loan made under this Act.

The findings of the Secretary of the Army and the Secretary of the Interior with respect to any matters which are committed to them by this Act shall be final and conclusive.

SEC. 3. (a) Prior to making the loan authorized by section 2 of this Act, the Secretary of the Interior shall require the Oakdale and South San Joaquin Irrigation Districts to enter into a joint contract pursuant to the laws of the State of California, and satisfactory to the Secretary of the Interior, which shall provide—

(1) that the loan shall only be disbursed to pay the costs required for the construction of the Tri-Dam project to the extent such costs are beyond the ability of the districts to finance from Tri-Dam project net power revenues otherwise than by said loan;

(2) that the districts shall sell the maximum amount of revenue bonds that can be sold to be amortized from Tri-Dam project net power revenues not pledged to repayment of the loan authorized by this Act;

(3) for repayment of that loan from (a) all net revenues to the districts derived from the use of water from the Tri-Dam project in the operation of the Melones powerplant beginning on June 16, 1977; (b) all net revenues to the districts derived from the use of water from the Tri-Dam project in the operation of the Stanislaus powerplant beginning on December 16, 1985; and (c) all such net revenues derived from the operation both of these powerplants and of the powerplants which are included within the Tri-Dam project on and after the forty-ninth anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch powerplants of the Tri-Dam project;

(4) that payments to be made on said loan from the net revenues to be derived from the Melones powerplant as aforesaid shall be at the rate of $136,000 each year beginning in the year 1978 and payments to be made on said loan from the net revenues to be derived from the Stanislaus powerplant as aforesaid shall be at the rate of $604,000 each year beginning in the year 1986;

(5) that all balances of any loan made hereunder remaining unpaid after application of the net power revenues allocated to repayment of said loan by the provisions of subsection (a) (3) of section 3 of this Act shall become due and be paid as aforesaid on the fiftieth anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch plants of the Tri-Dam project as hereinbefore defined; and

(6) that in the event either or both of the outstanding licenses issued by the Federal Power Commission under projects numbered 708 and 1318 are not renewed or are relicensed under conditions that reduce the revenues to be received by the Oakdale and the South San Joaquin Irrigation Districts from the Melones and Stanislaus powerplants below the payments specified in subsection (a) (4) of section 3 of this Act prior to repayment of the loan authorized by this Act, said districts shall be credited with repayment of an amount equal to the revenues which, except for such nonrenewal, nonrelicensing or conditional relicensing, would be available for repayment of their obligation.

(b) Prior to making the grant authorized by subsection (2) of section 2 of this Act, the Secretary of the Army and the Oakdale and South San Joaquin Irrigation Districts shall have entered into a joint contract pursuant to the laws of the State of California, and satisfactory to the Secretary of the Army, designed to assure such operation of the Tri-Dam project as will produce the benefits upon which the flood-control allocation and the grant are predicated.

(c) Any contract entered into under this Act prior to the appropriation of the full amount of funds required therefor shall recite that the obligation of the United States thereunder is contingent upon appropriations therefor by the Congress.

(d) The authority to make the loan and grant contained in this Act and the availability of any appropriations made to carry out its provisions shall be for a period of ten years from the date of enactment of this Act.

Senator KUCHEL. The bill being considered today which I have introduced in the Senate is a companion to the bill introduced in the House of Representatives by Congressman Johnson and is a carefully drawn proposal designed to carry out a basic principle of the Eisenhower administration philosophy. It envisions a commendable partnership of Federal and local governmental agencies in cooperation with private enterprise in developing our natural resources.

The precise bill which I introduced earlier this session has been studied painstakingly and has been the subject of conferences between representatives of the Interior Department and the irrigation districts sponsoring the Tri-Dam project. As a result, a comprehensive amendment has been drafted which actually is a substitute differing primarily in language and not in effect on which both parties have agreed.

The only significant difference between the original proposal and the draft which will be offered for approval of the Senate is that an additional safeguard has been devised for the Federal Treasury and the National Government's taxpayers. By making provision for repayment in the unlikely event that certain licenses are not renewed by the Federal Power Commission, the perfected language specifically eliminates any possibility that the Federal Government would wind up in the position of subsidizing a portion of this project. This feature will be explained in detail by the witnesses who have been engaged in the discussions and worked out the language.

I should like to highlight in this brief introductory statement the general outline and essential features of this legislation. The bill in final effect would provide Federal financial aid for three new dams required to develop irrigation districts in Stanislaus and San Joaquin Counties. These structures would be located on the Stanislaus River and would serve some 121,000 acres in an area with approximately 30,000 people.

To emphasize the fact that this is a true partnership conforming with views President Eisenhower has expressed repeatedly, I wish to point out that the local interests already have spent between $1,250,000 and $1,500,000 for surveys and preliminary engineering. In other words, the people in these two districts have spent their own money in order to help themselves and are not asking Uncle Sam to pay bills which often are an obligation of the national taxpayers.

The broad plans for this development have been discussed with President Eisenhower, who encouraged the preparation of legislation to make the work possible.

The bill would provide what amounts to a credit—one which it is probable would not be required in entirety—of $10,370,000 toward construction of 3 dams and related hydroelectric plants that represent a $50 million undertaking. This figure is only the proportion of the cost of the project which can be allocated to irrigation. There is ample precedent for this type of assistance, which is customary for projects which are built by the Bureau of Reclamation.

The Federal Government also would make a grant equal to the portion of the estimated cost which represents the flood-control item. In this regard, there also is ample precedent.

Furthermore, the bill puts a ceiling on the total of the loan and grant so that the most the Federal Government ever would advance would be $10,370,000, or less than one-quarter of the anticipated total expenditure. Before any funds could be loaned, the two irrigation districts must enter into a contract with the Interior Department assuring repayment by earmarking all revenues they receive from the use of water and sale of power for specific periods. Under schedules based on cautious planning, even if the districts are forced by circumstances to take full advantage of the proposed Federal credit, the indebtedness would be entirely repaid by 1998.

The record of these irrigation districts should inspire confidence in their ability to carry out the proposed Tri-Dam project. Nearly 30 years ago, they built jointly the Melones Dam and powerplant, a $50 million undertaking. The cost is being paid by semiannual payments out of power sales, all installments have been made on schedule, and the obligation will be wiped out by 1967.

The Tri-Dam project is based on the same businesslike procedure that made possible the Melones project.

Underlying the Tri-Dam project are contracts for the sale of all the electricity generated by these plants up to the year 2000. The revenues from these sales will be sufficient to pay for the entire development.

The venture has the overwhelming approval of the people of the area to be benefited by the planned additional water supply. A bond election authorizing a $52 million issue was carried by overwhelming margins, 10 to 1 in one instance, and 36 to 1 in the other.

The reason Federal financial aid is felt justified is that since the bond issue was approved interest rates have risen, due largely to action of the Federal Government. While it is probable I am told, that only a portion of the authorized Federal loan may be required, the present condition of the money market is such that prospective revenues would not be adequate to finance the project and provide the necessary reserves for contingencies. The two districts still intend to finance the preponderant share of the cost through bond sales, and Federal funds would be used only to a limited degree if private financing proves inadequate.

I believe that undertakings of this type are desirable beyond question. By the pooling of initiative and financial capacity, this legislation would clear the way for a development that would have the greatest possible degree of local control and responsibility. The bill represents a definite departure from the type of Federal paternalism that has caused widespread concern in recent years about potential breakdown of our traditional dual system of government. For that reason alone, I believe it is entitled to the earliest practicable consideration on the floor of Congress and urge the subcommittee to give it a favorable report.

In conclusion I desire to make a part of the record a letter addressed to me by the Governor of California, the Honorable Goodwin J. Knight, and I will have included in the record the letters I have received from the Secretary of the Interior, the Secretary of the Army, and the Director of the Bureau of the Budget.

(The material referred to follows):

UNITED STATES DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D. C., April 16, 1954.

HON. HUGH BUTLER,
Chairman, Committee on Interior and Insular Affairs,
United States Senate, Washington, D. C.

MY DEAR SENATOR BUTLER: You have requested a report from the Department on S. 3040, a bill to provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, California, in the construction of the Tri-Dam project.

This measure, though confined to a single project, represents an interesting facet of a problem which this administration has been studying for quite some time—the problem, that is, of bringing together the resources of local agencies and of the Federal Government in the development of multiple-purpose projects.

The Tri-Dam project, as it has been outlined to this Department by its sponsors, consists of three multiple-purpose structures at the Donnells, Beardsley, and Tulloch sites on the Stanislaus River. These structures would serve power, irrigation, and, perhaps, flood-control purposes. They would also permit the generation of additional electric energy at the Stanislaus and Melones plants owned and operated by the Pacific Gas & Electric Co.

It is our understanding that the irrigation districts have already entered into a contract with the Pacific Gas & Electric Co. under which that company will purchase the entire output of the new plants and will pay for the benefits which its Melones and Stanislaus plants will derive from the project.

The estimated cost of constructing the project, according to the information supplied to us by the irrigation districts, is $47,647,000, of which approximately $1,250,000 has already been spent. Their ability to finance this cost through the sale of revenue bonds will apparently depend in large measure on the interest rate which prevails at the time the bonds are floated. A study dated July 18, 1952, which was prepared for the districts by their chief engineers at a time when it appeared that funds for the Tri-Dam project could be borrowed at 3 percent indicated a profit under the Pacific Gas & Electric Co. contract ranging from "a minimum of $6,229,000 to a possible maximum of $25,623,000 over the life of the contract period." Under these conditions it was believed that sufficient funds could be borrowed privately to construct the project.

The net revenues which the district will receive under the Pacific Gas & Electric Co. contract, it is now estimated, will support a loan of about $43,100,000 at 4 percent interest, $44,800,000 at 3¾ percent interest, or $46,500,000 at 3½ percent interest. It seems, therefore, that it will probably be necessary for the districts to secure partial financing of their project from other sources if they are to undertake construction of this project.

The plan made by the districts with respect to repayment of the proposed Federal loan contemplates that revenues from the Melones powerplant (beginning in 1977) and from the Stanislaus powerplant (beginning in 1985) will be the principal source for such repayment. The existing Federal Power Commission licenses for these 2 plants expire in the 2 years just stated. Application has been made by the Pacific Gas & Electric Co. for a license, to expire in the year 2000, combining these two plants as well as one other into a single project. Section 10 of the act of December 22, 1944 (58 Stat. 887, 901), authorized construction by the Corps of Engineers of a reservoir, referred to as the New Melones Reservoir, for flood-control purposes. The New Melones Dam would be downstream from, and its reservoir would submerge, the existing Melones Dam and Reservoir and affect the existing Melones powerplant of the Pacific Gas & Electric Co. Construction of power facilities at the New Melones Dam is not presently authorized but is contemplated in the comprehensive plans submitted to the Congress by the Corps of Engineers (H. Doc. 367, 81st Cong.) and by this Department (S. Doc. 113, 81st Cong.). It is thus uncertain how far dependence can be placed exclusively on Melones and Stanislaus Reservoirs for repayment of any Federal loan.

We believe that this proposal would be a desirable application of the partnership concept of resource development. This Department would not, therefore, object to the enactment of S. 3040 subject to its being amended to cover the following several points:

(1) The bill provides (p. 1, lines 9–10) that the Tri-Dam project shall "be constructed and operated under the laws of the State of California." This provision is inconsistent with the recognition elsewhere in the bill that the project is licensed under and subject to the terms of the Federal Power Act. We recommend, therefore, that this provision be deleted. We recommend, also, that the phrase "pursuant to the laws of the State of California," which appears both on page 3, lines 1 and 2, and page 5, lines 11 and 12, be stricken, since the contracts there referred to will clearly have to be consistent with the laws of the United States under which they are negotiated as well as those of the State of California.

(2) The bill speaks (sec. 3, subsec. (a), part (3)) of "net revenues * * * derived from the use of water from the Tri-dam project" in the operation of the Melones and Stanislaus powerplants. It is our understanding that the districts' proposal is not limited to revenues derived from the use of such water but includes revenues earned through the use of their existing facilities as well. We suggest, therefore, that it would be more appropriate if, for the language just referred to, there were substituted the expression "all earnings derived by

the districts from the use of water furnished for the operation of," as the case may be, the Melones and the Stanislaus powerplants.

(3) The provisions of section 3, subsection (a) part (4), appear to be in conflict with the possibility envisioned in part (6) of the same subsection that the Federal Power Commission licenses for the Melones and Stanislaus plants may not be renewed or may be renewed under such conditions as will reduce the districts' earnings from these plants. In view of this we recommend that part (4) be deleted.

(4) Part (5) of subsection (a), section 3, of the bill would make the entire amount of the loan due and payable on the 50th anniversary of the first production of power for commercial use by the Tri-Dam project plants. The plan submitted to this Department indicates that full payment can be expected on the 49th anniversary of the completion of the project. We recommend that the bill be amended to provide that amounts unpaid by application of the other earnings as elsewhere provided in the bill, shall be payable on the 49th anniversary and shall be paid prior to the 50th anniversary except as is indicated hereinafter in this letter.

(5) The bill lacks any provision explicitly authorizing the inclusion in the contract of terms which the Secretary of the Interior finds pertinent to reasonable assurance of full payment of the loan. Such a provision should, we believe, be included.

(6) Part (5) of subsection (a), section 3 would, if enacted, have the effect of casting upon the United States risks arising from nonrenewal or limited renewal of the Federal Power Commission licenses which the districts should rightfully bear. While it is understandable that the districts should, in the event this happens, be given an extension of the period during which their payments may be made, this Department does not believe that any part of their debt should be canceled for this reason. It is, accordingly, our suggestion that provision be made for an extension of the payment period if the Federal Power Commission licenses are not renewed or are renewed under conditions which affect the districts' contemplated revenues adversely.

The attached redraft of the measure covers the above points and other less important matters. It was first prepared for use in connection with consideration by the House Committee on Interior and Insular Affairs of House Joint Resolution 330, a measure similar in purpose to S. 3040. We recommend that it be given the consideration of your committee.

The Bureau of the Budget has advised that there would be no objection to the submission of this report to your committee.

Sincerely yours,

DOUGLAS MCKAY,
Secretary of the Interior.

A BILL To provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, California, in the construction of the Tri-Dam project

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated not more than $10,370,000 which shall be available for—

(1) a loan by the United States, acting through the Secretary of the Interior, to the Oakdale and South San Joaquin Irrigation Districts, California, jointly, of a sum equal to that portion of the estimated cost of construction the Tri-Dam project which the said Secretary determines (a) to be equitably allocable to irrigation or (b) to be beyond the ability of the said districts to finance from project revenues otherwise than by this loan, whichever is less; and

(2) a grant by the United States, acting through the Secretary of the Interior, to said districts jointly of a sum equal to that portion of the estimated cost of constructing the Tri-Dam project which the Secretary of the Army determines to be equitably allocable to flood control.

The sum of the loan and the grant shall in no event exceed $10,370,000: *Provided*, That in the event the loan is made before the grant and that the sum of the two exceeds the sum of $10,370,000, the amount of the loan may be reduced by the amount of the excess. The finding of the Secretary of the Army and the Secretary of the Interior with respect to any matters which are committed to them by this act shall be final and conclusive.

SEC. 2. (a) Prior to making the loan authorized by section 1 of this Act, the Secretary of the Interior shall require the Oakdale and South San Joaquin Irrigation Districts to enter into a joint contract which shall provide for re-

payment of that loan from (1) all earnings derived by the districts from the use of water furnished for operation of the Melones powerplant by or through facilities of the districts beginning on June 16, 1977, (2) all earnings derived by the districts from the use of water furnished for the operation of the Stanislaus powerplant by or through facilities of the districts beginning on December 16, 1985, and (3) all net revenues derived from the operation of the powerplants which are included within the Tri-Dam project on and after the forty-ninth anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch powerplants of the Tri-Dam project. Except as otherwise provided hereinafter, all balances of any loan made hereunder remaining unpaid after application of net power revenues as aforesaid shall become payable on the forty-ninth anniversary of the completion of the Tri-Dam project and shall be repaid prior to the fiftieth anniversary of such completion. There shall be included in the contract such other provisions as the Secretary of the Interior finds pertinent to reasonable assurance of full payment of the loan as aforesaid. In the event that either or both of the outstanding licenses issued by the Federal Power Commission under projects numbered 708 and 1318 are not renewed at the expiration thereof or are renewed for a period ending prior to January 1, 2004, or under conditions which reduce the earnings derived by the districts in connection with the Melones and Stanislaus powerplants as aforesaid, the period for repayment of the loan by the Oakdale and the South San Joaquin Irrigation Districts may be extended by the Secretary for such number of years as he finds is required by reason of the loss or reduction in earnings so occasioned.

(b) Prior to making the grant authorized by section 1 of this Act, the Secretary of the Army and the Oakdale and South San Joaquin Irrigation Districts shall have entered into a joint contract designed to assure such operation of the Tri-Dam project as will produce the benefits upon which the flood-control allocation and the grant are predicated.

(c) Any contract entered into under this Act prior to the appropriation of the full amount of funds required therefor shall recite that the obligation of the United States thereunder is contingent upon the making of appropriations therefor.

(d) The authority to make the loan and grant contained in this Act and the availability of any appropriations made to carry out its provisions shall expire on the tenth anniversary of the date of enactment of this Act.

SEC. 3. As used in this Act, the term "Tri-Dam project" means the multiple-purpose irrigation and hydroelectric project on the Stanislaus River in California jointly undertaken by the Oakdale and the South San Joaquin Irrigation Districts and presently licensed by the Federal Power Commission under projects numbered 2005 and 2067.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., April 20, 1954.

Hon. HUGH BUTLER,
Chairman, Committee on Interior and Insular Affairs,
United States Senate, Washington, D. C.

MY DEAR MR. CHAIRMAN: This is in reply to your letter of March 2, 1954, requesting the views of the Bureau of the Budget on S. 3040, a bill to provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, Calif., in the construction of the Tri-Dam project.

Enactment of this legislation would provide a basis for the Federal Government to assist in the financing by the Oakdale and South San Joaquin Irrigation Districts, Calif., of the Tri-Dam project consisting of three multiple-purpose structures at the Donnells, Beardsley, and Tullock sites on the Stanislaus River for power, irrigation, and flood-control purposes. We believe that the proposal represents one method of application of the partnership concept of resource development and would be a step toward implementation of the policy of this administration to encourage local participation in this field.

The Bureau of the Budget has approved the submission by the Secretaries of the Army and of the Interior of their reports to your committee with regard to this bill. The Department of the Army suggests providing that plans for flood control be subject to aproval by the Corps of Engineers prior to construction. The Department of the Interior suggests a number of revisions, most of which pertain to the provisions for repayment of the Federal loan.

If so amended, the Bureau of the Budget would recommend the enactment of this legislation.

Sincerely yours,

ROWLAND HUGHES, *Director.*

APRIL 14, 1954.

Hon. HUGH BUTLER,
Chairman, Committee on Interior and Insular Affairs,
United States Senate.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of the Department of the Army with respect to S. 3040, 83d Congress, a bill to provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, Calif., in the construction of the Tri-Dam project.

The Department of the Army has considered the above-mentioned bill. The purpose of the bill is to authorize to be appropriated not more than $10,370,000 which shall be available for a loan without interest by the United States, acting through the Secretary of the Interior, to assist the Oakdale and South San Joaquin Irrigation Districts in the construction of the Tri-Dam project, a multiple-purpose project on the Stanislaus River in California presently under license by the Federal Power Comimssion. The bill further authorizes to be appropriated a grant of an amount equal to that portion of the estimated cost of constructing the Tri-Dam project which the Secretary of the Army determines to be equitably allocable to flood control. Prior to the making of the grant, the Secretary of the Army and the irrigation districts shall have entered into a contract designed to assure such operation of the project as will produce the benefits upon which the flood-control allocation and grant are predicated.

The proposed Tri-Dam project would affect primarily two projects authorized by the Flood Control Act of 1944 (58 Stat. 887) for construction by the Corps of Engineers. These improvements are the New Melones Dam and Reservoir on the Stanislaus River and levee and bank-protection work on the lower San Joaquin River. The Tri-Dam project, if operated for flood control to the extent considered most probable on the basis of present information, would provide only a partial degree of protection to downstream areas and might result in giving a false sense of security to those protected by the levees. Indications are that the project could control satisfactorily floods having a frequency of once in 10 years. Control would be lost in the case of larger and less frequent floods, and unregulated flows would be passed down the Stanislaus River to combine with flows in the lower San Joaquin River, with disastrous results because of probable levee failures. The Tri-Dam project would reduce the potential flood-control benefits creditable to New Melones Reservoir, with the resultant effect on the economic justification of the New Melones project possibly being so unfavorable as to postpone its construction indefinitely.

With respect to section 3 of the bill, it is suggested that the following language be added at the end of subparagraph (b):

"The contract shall contain provisions that plans for flood-control features of the project shall be subject to approval by the Corps of Engineers prior to construction and that the project will be maintained and operated for flood control at the expense of the irrigation districts in accordance with rules and regulations to be prescribed by the Secretary of the Army."

Subject to the foregoing suggested revision, the Department of the Army would interpose no objection to the enactment of S. 3040.

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

(Signed) Robert T. Stevens,
ROBERT T. STEVENS,
Secretary of the Army.

STATE OF CALIFORNIA,
GOVERNOR'S OFFICE,
Sacramento, April 30, 1954.

Re Senate bill 3040.

Hon. THOMAS H. KUCHEL,
United States Senator, Washington, D. C.

DEAR TOMMY: I am advised that Senate bill 3040, introduced by you to assist in the financing of the Tri-Dam project of the Oakdale Irrigation District and the South San Joaquin Irrigation District, will shortly come before the Senate Committee on Interior and Insular Affairs for hearing.

This project will not only supply vitally needed irrigation water for these two districts, comprising 143,457 acres in Stanislaus and San Joaquin Counties, but will also supply additional electric power which is so essential to the development of the State of California.

The engineering features of this project have been thoroughly studies and reviewed by the State engineer, and have his approval. The project is of great benefit and value to the State of California. It will add considerably to the economic welfare of the people of this State.

The two districts are to be congratulated for their efforts to develop additional water and power at their own expense. They now ask for a Government loan, in an amount not to exceed $10,370,000, only because of a financing problem which was brought about largely by the recent increase in bond interest rates, and which is now holding up the actual construction of the project.

The proopsal embodied in your bill follows the basic plan of the districts to finance the project themselves. They will pay for better than four-fifths, if not all, of the total cost of the project by the sale of district bonds; and agree to repay any sums temporarily loaned by the Federal Government, in accordance with your bill.

The project and the bill you have introduced have the full support of my office.

Cordially,

GOODWIN J. KNIGHT, *Governor.*

Senator KUCHEL. Here today is my friend Congressman Leroy Johnson, and I would be most happy if he would make a statement for the record.

STATEMENT OF HON. LEROY JOHNSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Representative JOHNSON. I will be glad to make a very brief statement. My resolution, House Joint Resolution 330, was introduced into the House of Representatives on the 6th day of January 1954, and it received a favorable report from the Department of the Interior. The Department of the Interior suggested certain amendments which we intend to incorporate in our resolution in the event we have a hearing.

Unfortunately, Mr. Chairman, over on the other side of the Capitol we were blocked out by the fact the House had a very heavy schedule of administration measures, and we were meeting at 10 o'clock every day. The gentlemen representing the irrigation districts had a firm date to meet 2 hours during one of the days in this week, and that day we were blocked out and have been blocked out ever since. We anticipate having a hearing next week.

The important feature of the Department of the Interior's proposal to amend House Joint Resolution 330 has my hearty recommendation. It provides briefly that instead of giving the $10,370,000 to the irrigation districts, the funds shall be in the control of the Secretary of the Interior for a period of 5 years. It also provides that if the districts may need any of this money in order to complete the payment to the contractors who will build the project, they must make a showing to the Secretary of the Interior and justify their request for funds. He will review those requests and give them only what funds they need to complete the project that they cannot themselves provide through sale of bonds. It is possible that not over a million dollars will be required in order to properly assist these districts.

I also want to point out briefly the reason we find ourselves in this position, the position of needing this money. At the time that the

districts were giving their notices to bidders, they contemplated an interest rate of 2¾ percent or 3 percent at the maximum. During that time the National Government, the Department of the Treasury, determined it would increase the interest rates on war bonds and find a way to pay war bonds off on a sort of installment plan; and as an incentive to prospective purchasers of those bonds they raised the interest rates, I think, to 3½ percent.

At any rate, the interest was raised considerably above what these districts were contemplating paying to the security brokers who were going to buy their bonds. So in a sense they are put in this awkward position financially through the conduct of the Federal Government. Fortunately for the districts, the President announced that his administration was in harmony with the idea of cooperating with local public agencies in the conservation of waters and other types of projects of that kind.

So we feel we have a peculiar claim in the fact that all the planning of this group and the prospective sale of their bonds was damaged by the fact that the Federal Government took steps that had the inevitable effect of raising the interest rates. The result is that over a 40-year span the bite of a higher interest rate would be so large there is some doubt as to whether they would have enough cash to pay the contractor for the contract when it was completed.

As I say, to me the project is an ideal one. We have witnesses here, men who have devoted years to the study of this problem, legal witnesses and engineering witnesses. I am sure they can enlighten you on every single phase of this problem. I might say that I talked to the President personally about it and he told me it was the best project of its kind that had been presented to the White House.

In every way this thing merits the approval of the Houses of the Congress. I hope you can get your bill in shape to get it through the Senate. We are going to push as hard as we can on our side of the Capitol to get it through the House. We are very anxious to have one of these bills, irrespective of which one it is, and they will both be identical, get through the Congress this year.

I appreciate the fact that you afforded me this opportunity to come here; and if I leave, I hope you will understand it is because I am responding to a quorum call on the other side of the Capitol.

Senator KUCHEL. Thank you very much, Congressman.

Also, for the record I would like to introduce a telegram addressed to Senator Millikin signed by John C. Lynn, representing the American Farm Bureau Federation in support of this bill, and a letter from the National Reclamation Association, addressed to Senator Millikin, chairman of this subcommittee, signed by William E. Welsh.

(The telegram referred to is as follows:)

JULY 1.

Senator EUGENE D. MILLIKIN,
Senate Office Building:
(Attention: Mr. Nelson.)

The American Farm Bureau Federation believes that S. 3040 (H. J. Res. 330) offers an approach to financing water projects which insures local control and responsibility. We are in accord with the basic principles contained in this proposed legislation. We respectfully recommend that this telegram be made a part of the hearing record.

JOHN C. LYNN, *Legislative Counsel.*

(The letter referred to is as follows:)

NATIONAL RECLAMATION ASSOCIATION,
July 1, 1954.

Hon. EUGENE D. MILLIKIN,
Chairman, Subcommittee on Irrigation and Reclamation,
Senate Interior and Insular Affairs Committee,
Senate Office Building, Washington, D. C.

DEAR SENATOR MILLIKIN: My attention has been called to S. 3040, to provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, California, in the construction of the Tri-Dam project.

I have been provided with a mimeographed copy of a bill which, I understand, has been agreed upon by the sponsors of this legislation and representatives of the Interior Department and which, it is suggested, should be substituted for the original bill.

Among other things, this proposed substitute bill would authorize the Secretary of the Interior to make a loan without interest, to the above irrigation districts jointly of a sum equal to the estimated costs to be allocated to irrigation but if a grant for flood control is allowed, the total of the grant and the loan shall not exceed the costs allocated to irrigation.

These provisions for a loan to cover the costs allocable to irrigation and a grant to cover costs allocable to flood control are substantially in accord with principles and policies approved by the National Reclamation Association as set forth by two of the resolutions adopted at the last annual meeting, copies of which are attached.

WILLIAM E. WELSH,
Secretary-Manager.

TWO RESOLUTIONS ADOPTED BY NATIONAL RECLAMATION ASSOCIATION AT ANNUAL MEETING, RENO, NEV., OCTOBER 14–16

RESOLUTION NO. 22—NONREIMBURSABLES FOR NON-FEDERAL PROJECTS

Whereas under existing law, in the construction of Federal projects, that part of the estimated cost allocated to flood control, navigation, and fish and wildlife, is deemed to be nonreimbursable; and

Whereas projects initiated under State law, by State bodies, irrigation districts, or nonprofit water companies, financed wholly by funds other than those appropriated by the Congress, may produce similar national flood control, navigation and fish and wildlife benefits on said projects; but under present law there is no contribution from the Federal Government: Now, therefore, be it

Resolved, That the National Reclamation Association favors congressional authorization for the contribution by the United States of funds for such nonreimbursable costs on these projects.

RESOLUTION NO. 29—LOANS FOR PROJECTS INITIATED UNDER STATE LAW

Whereas the contract cost of constructing storage facilities, canals, irrigation distribution systems, hydroelectric power facilities where economically advantageous, and other construction in connection with reclamation development, as designed by the Bureau of Reclamation for construction on reclamation projects, is often beyond the ability of a contracting agency to repay; and

Whereas less costly development planned and constructed by such a contracting agency would often serve agency requirements, if the agency were financially able to construct such development: Now, therefore, be it

Resolved by the National Reclamation Association, That Congress be urged to enact legislation authorizing the Secretary of the Interior to grant loans to such agencies for the construction by such agencies of storage facilities, canals, irrigation distribution systems, hydroelectric power facilities where economically advantageous, and other construction in connection with reclamation development, on the same basis as if constructed by the Bureau of Reclamation.

Senator KUCHEL. I would like to introduce Mr. P. J. Minasian.

STATEMENT OF P. J. MINASIAN, ATTORNEY FOR THE OAKDALE IRRIGATION DISTRICT, REPRESENTING OAKDALE IRRIGATION DISTRICT AND SOUTH SAN JOAQUIN IRRIGATION DISTRICT

Mr. MINASIAN. My name is P. J. Minasian, and I am attorney for the Oakdale Irrigation District and also representing the South San Joaquin Irrigation District.

In view of the fact there have been amendments proposed to the printed bill, I would like at this time to introduce a mimeographed redraft of the bill. The printed bill was submitted to the Department of the Interior for a report, and with their report the Department of the Interior suggested a revision of the bill. When that revision was received by the districts, it was presented to their bond counsel and their financial advisors, Blythe & Co., and they thought certain clarified amendments were required.

So the mimeographed redraft I would like to introduce sets forth in strikeout and underline form the revised bill as prepared by the Interior Department, together with the amendments which have been suggested to clarify it. I understand Mr. Bennett will testify on behalf of the Interior Department that the wording as now proposed in that mimeographed copy is satisfactory.

Senator KUCHEL. The amendments which are indicated in the suggested bill which you now have offered and which will be made a part of the record are the amendments recommended by the Department of the Interior?

Mr. MINASIAN. That is correct.

(The material referred to follows:)

A BILL To provide financial assistance to the Oakdale and South San Joaquin Irrigation Districts, California, in the construction of the Tri-Dam project

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is authorized to be appropriated not more than $10,370,000 which shall be available for—

(1) a loan *without interest* by the United States, acting through the Secretary of the Interior, to the Oakdale and South San Joaquin Irrigation Districts, California, jointly, of a sum equal to that portion of the estimated cost of constructing the Tri-Dam project which the said Secretary determines [(a)] to be equitably allocable to irrigation [or (b) to be beyond the ability of the said districts to finance from project revenues otherwise than by this loan, whichever is less]; and (2) a grant by the United States, acting through the Secretary of the Interior, to said districts jointly of a sum equal to that portion of the estimated cost of constructing the Tri-Dam project which the Secretary of the Army determines to be equitably allocable to flood control. The sum of the loan and the grant shall in no event exceed $10,370,000: *Provided*, That in the event the loan is made before the grant and that the sum of the two exceeds the sum of $10,370,000, the amount of the loan may be reduced by the amount of the excess. The findings of the Secretary of the Army and the Secretary of the Interior with respect to any matters which are committed to them by this Act shall be final and conclusive.

SEC. 2 (a). Prior to making the loan authorized by section 1 of this act, the Secretary of the Interior shall require the Oakdale and South San Joaquin Irrigation Districts to enter into a joint contract which shall provide—[for repayment of that loan from (1) all earnings derived by the districts from the use of water furnished for operation of the Melones powerplant by or through facilities of the districts beginning on June 16, 1977, (2) all earnings derived by the districts from the use of water furnished for the operation of the Stanislaus powerplant by or through facilities of the districts beginning on December 16, 1985, and (3) all net revenues derived from the operation of the powerplants which are included within the Tri-Dam project on and after the forty-ninth

anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch powerplants of the Tri-Dam project.

[Except as otherwise provided hereinafter, all balances of any loan made hereunder remaining unpaid after application of net power revenues as aforesaid shall become payable on the forty-ninth anniversary of the completion of the Tri-Dam project and shall be repaid prior to the fiftieth anniversary of such completion.]

(1) that the loan shall only be disbursed to pay the costs required for the construction of the Tri-Dam project to the extent such costs are beyond the ability of the districts to finance from Tri-Dam project net power revenues otherwise than by said loan;

(2) that the districts shall sell the maximum amount of revenue bonds that can be sold to be amortized from Tri-Dam project net power revenues not pledged to repayment of the loan authorized by this Act;

(3) for repayment of that loan from (a) all net revenues to the districts derived from the use of water from the Tri-Dam project in the operation of the Melones powerplant beginning on June 16, 1977; (b) all net revenues to the districts derived from the use of water from the Tri-Dam project in the operation of the Stanislaus powerplant beginning on December 16, 1985; and (c) all such net revenues derived from the operation of both of these powerplants and of the powerplants which are included within the Tri-Dam project on and after the 49th anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch powerplants of the Tri-Dam project; and

(4) That all balances of any loan made hereunder remaining unpaid after application of the net power revenues allocated to repayment of said loan by the provisions of subsection (a) (3) of section 2 of this act shall become due and paid as aforesaid on the 50th anniversary of the first production of power for commercial use by the Donnells, Beardsley, or Tulloch plants of the Tri-Dam project as hereinafter defined.

There shall be included in the contract such other provisions as the Secretary of the Interior finds pertinent to reasonable assurance of full repayment of the loan as aforesaid.

In the event that either or both of the outstanding licenses issued by the Federal Power Commission under projects numbered 708 and 1318 are not renewed at the expiration thereof or are renewed for a period ending prior to January 1, 2004, or under conditions which reduce the earnings derived by the districts in connection with the Melones and Stanislaus powerplants as aforesaid, the period for repayment of the loan by the Oakdale and South San Joaquin Irrigation Districts may be extended by the Secretary for such number of years as he finds is required by reason of the loss or reduction in earnings so occasioned.

(b) Prior to making the grant authorized by section 1 of this act, the Secretary of the Army and the Oakdale and South San Joaquin Irrigation Districts shall have entered into a joint contract designed to assure such operation of the Tri-Dam project as will produce the benefits upon which the flood-control allocation and the grant are predicated.

(c) Any contract entered into under this act prior to the appropriation of the full amount of funds required therefor shall recite that the obligation of the United States thereunder is contingent upon the making of appropriations therefor.

(d) The authority to make the loan and grant contained in this act and the availability of any appropriations made to carry out its provisions shall expire on the 10th anniversary of the date of enactment of this act.

SEC. 3. As used in this act, the term "Tri-Dam project" means the multiple-purpose irrigation and hydroelectric project on the Stanislaus River in California jointly undertaken by the Oakdale and the South San Joaquin Irrigation Districts and presently licensed by the Federal Power Commission under projects numbered 2005 and 2067.

Mr. MINASIAN. Since the witnesses will refer to a document entitled "Memorandum Re Need of Legislation To Make Possible the Construction of the Tri-Dam Project, California," dated May 15, 1954, I would like at this time to introduce that document into the record.

Senator KUCHEL. It will be received.

(The material referred to follows:)

TRI-DAM PROJECT OF OAKDALE IRRIGATION DISTRICT AND SOUTH SAN JOAQUIN IRRIGATION DISTRICT, CALIFORNIA

Memorandum Re Need of Legislation To Make Possible the Construction of the Tri-Dam Project, California, Dated May 15, 1954

THE TRI-DAM PROJECT AND THE DEVELOPING AGENCIES

The Tri-Dam project is a joint undertaking of the Oakdale Irrigation District and South San Joaquin Irrigation District (hereinafter referred to as "districts"), public agencies of the State of California, located in the counties of Stanislaus and San Joaquin, organized in the year 1909. They contain 143,457 acres of which 121,000 acres are presently irrigated, and have a population of approximately 30,000 people. These districts are intensively farmed (see exhibits F and G attached hereto) but need additional water to meet their full requirements. This need is shown by exhibit A, attached hereto. The Tri-Dam project is designed to meet this need, assist in flood control, produce hydroelectric energy, and provide recreational benefits.

I. THE PROJECT

The Tri-Dam project embraces the Donnels, Beardsley, and Tulloch Dams, powerplants and related works on the Stanislaus River in California. The physical nature of the project is set forth in exhibit B attached hereto. A general layout of the project is set forth on the face of the exhibit and a description is set forth on the reverse side of the exhibit.

II. PUBLIC BENEFITS

The project will provide the following public benefits:

(1) It will add 230,000 acre-feet of urgently needed stored water for late-season irrigation and provide holdover storage for dry years as shown on exhibit A.[1]

(2) It will provide 81,500 kilowatts installed electrical generating capacity which, in combination with existing powerplants using the stored water, will generate an average of 475 million kilowatt-hours of electrical energy annually.

(3) It will provide flood-control benefits on the Stanislaus River, the extent of which are now being studied by the United States Corps of Engineers.

(4) It will create three scenic mountain lakes with access roads and will provide ideal recreational facilities in an area now undeveloped.

(5) It will furnish employment for several thousand persons, not only in California but throughout the Nation. $48 million will be placed in circulation, not only in the local area constructing the project, but also throughout the United States in supplying generators, turbines, penstocks, transformers, and other equipment and materials.

III. THE STATUS OF THE PROJECT

The districts have been issued Federal Power Commission licenses (Nos. 2005 and 2067) covering all units of the project. These licenses, by virtue of S. 2094 (the Butler bill) passed by the last Congress, are in perpetuity on completion of the project. All necessary water right permits (Nos. 9360 to 9366, inclusive) have been issued to the districts by the State of California for the Tri Dam project and the State has assigned to the districts, the water required for the project covered by the State's filing No. 5648. The project has been completely engineered, plans and specifications prepared, and access roads constructed, at a cost to the districts in excess of $1,250,000. The State of California, through its State engineer, has made a comprehensive study and report on the project and found it feasible. Construction bids were called for and received in the spring of 1953 (see exhibit H, attached hereto) but award could not be made because of difficulties in financing arising out of the sudden rise in interest rates.

[1] Not printed.

IV. THE COST OF THE PROJECT

The present estimated cost of the project, based on low bids received in the spring of 1953, not including reserves for contingencies, is as follows:

Construction costs:	
District furnished equipment (low bids)	$6,500,000
Construction contracts (low bids)	32,220,000
Engineering, supervision, and administration:	
Cost to date	1,250,000
Completion cost	2,110,000
Other district costs:	
Land acquisition	150,000
Reservoir clearing	300,000
Road and railroad relocation	570,000
Housing	175,000
Heating and ventilating powerplants	52,000
Federal fire protection	35,000
Accounting and legal expense	215,000
Interest during construction, 3 years, 4 percent less 2 percent earned	4,070,000
Total	47,647,000

V. PROJECT REVENUES AVAILABLE

The districts have entered into a contract with the Pacific Gas & Electric Co., for payment for headwater benefits to its existing Melones and Stanislaus powerplants and for sale and purchase of the electrical energy to be derived from the project. A copy of that contract is attached hereto marked "Exhibit C." This contract will produce revenues as shown on exhibit D, attached hereto, summarized as follows:

(*a*) *For maintenance and operation.*—Paragraphs 11–a and 11–b (p. 3) of the contract provide for annual payments to be made for maintenance and operation of the project. The amount to be paid for this purpose is $302,000 per year multiplied by a labor index set up in the contract. This amount is ample to provide for all possible maintenance and operation costs plus a reasonable amount for contingencies and reserves. The effect of the labor index is to provide for escalation in maintenance and operation payments in direct proportion to any increase that may occur in such costs.

(*b*) *For amortization of bonds.*—Paragraph 10 (p. 3) of the contract provides for payments to be made of $2,204,000 per year to and including June 15, 1977, $2,068,000 per year thereafter to and including December 15, 1985, $1,464,000 per year thereafter to and including December 15, 1999, and $548,000 on April 30, 2000 for servicing of bonds sold to finance construction costs.

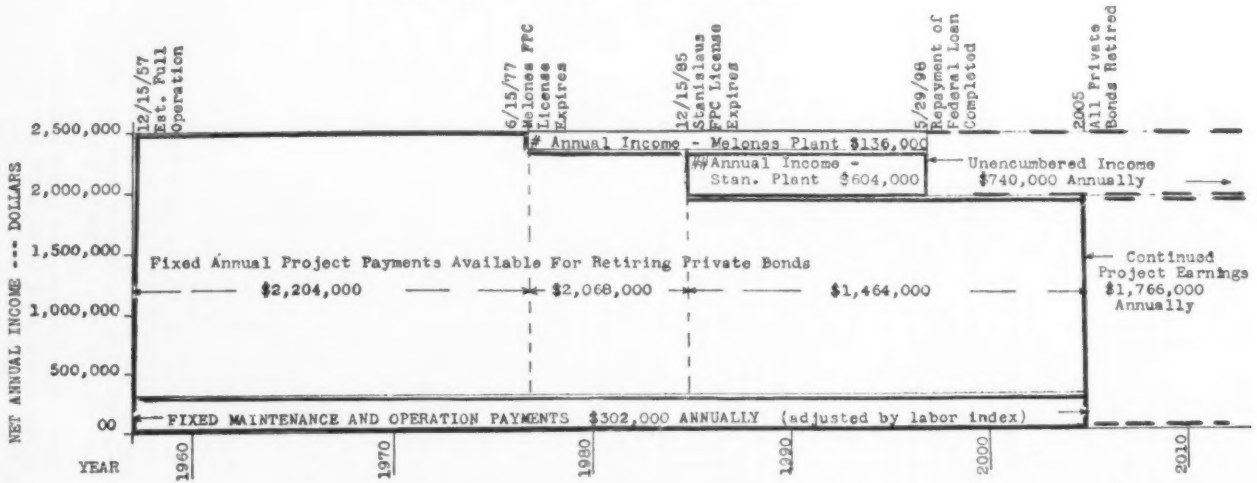
(*c*) *For repayment of Federal loan.*—Paragraphs 12 and 13 (p. 3) of the contract provide for payments of $136,000 to be made for each year that the Pacific Gas & Electric Co. has the right to operate its existing Melones powerplant after June 15, 1977, and for payment of an additional $604,000 to be made for each year that the Pacific Gas & Electric Co. has the right to operate its existing Stanislaus powerplant after December 15, 1985.

Melones powerplant and Stanislaus powerplant are now owned and operated by Pacific Gas & Electric Co., under Federal Power Commission licenses Nos. 708 and 1318, respectively. These licenses expire approximately on the respective dates above-mentioned. These plants are part of a large power-generating system of the Pacific Gas & Electric Co., and could not economically be isolated and used apart from that system. It is inconceivable that these power licenses would not be renewed but in any event renewal remains within the power and control of the Federal Government. Should the licenses be issued to some other operator, the districts' Tri-Dam project would provide headwater benefits for which, under existing law, the districts would be entitled to compensation comparable to the payments to be received under the Pacific Gas & Electric Co. contract.

In addition to these revenues, all power revenues of the project, with the exception of that required for maintenance and operation, will be available to retire any unpaid balance of the loan of the United States after the 49th anniversary of the first production of power for commercial use by the project.

EXHIBIT D

OAKDALE IRRIGATION DISTRICT AND SOUTH SAN JOAQUIN IRRIGATION DISTRICT
TRI-DAM PROJECT - CALIFORNIA
CHART SHOWING ANNUAL PAYMENTS TO DISTRICTS UNDER PACIFIC GAS & ELECTRIC COMPANY CONTRACT
FOR RETIRING PRIVATE BONDS AND
ANNUAL INCOME AVAILABLE FROM OPERATION OF MELONES AND STANISLAUS POWER PLANTS
FOR REPAYMENT OF FEDERAL LOAN OF $10,370,000



Note: #Melones Power Plant of P.G.&E.(25,000 KW) covered by FPC license No. 708.

Note: ##Stanislaus Power Plant of P.G.&E.(37,500 KW) covered by FPC license No. 1318.

These revenues, set forth in tabulation form, are as follows:

Tabulation showing period of time required for earnings from operation of Melones and Stanislaus powerplants (in accordance with pars. 12 and 13 of contract between districts and Pacific Gas & Electric Co., exhibit C) to retire proposed United States loan of $10,370,000

Year	Period of operation	Power earnings	Balance of loan ($10,370,000)
1977	Melones only, June 16 to Dec. 31, 199 days, at $372.60	$74,147	$10,295,853
1978	Melones only	136,000	10,159,853
1979	do	136,000	10,023,853
1980	do	136,000	9,887,853
1981	do	136,000	9,751,853
1982	do	136,000	9,615,853
1983	do	136,000	9,479,853
1984	do	136,000	9,343,853
1985	do	136,000	9,207,853
1985	Stanislaus only, Dec. 16 to 31, 16 days, at $1,654.79	26,477	9,181,376
1986	Melones and Stanislaus	740,000	8,441,376
1987	do	740,000	7,701,376
1988	do	740,000	6,961,376
1989	do	740,000	6,221,376
1990	do	740,000	5,481,376
1991	do	740,000	4,741,376
1992	do	740,000	4,001,376
1993	do	740,000	3,261,376
1994	do	740,000	2,521,376
1995	do	740,000	1,781,376
1996	do	740,000	1,041,376
1997	do	740,000	301,376
1998	Melones and Stanislaus, Jan. 1 to May 29, 148.65 days, at $2,027.39	301,376	
	Total	10,370,000	

After the year 1998, the revenues from Melones and Stanislaus powerplants will continue to be available at the rate of $740,000 per year until the expiration of the Pacific Gas & Electric Co. contract, and thereafter it is reasonable to assume a market will be available for the power at a comparable price. In addition, the net revenue received from the Donnells, Beardsley, and Tulloch powerplants in the amount of $1,464,000 per year will be available after the 49th anniversary of their first production of power for commercial use.

The contract (exhibit C) was entered into prior to the passage of S. 2094 (the Butler bill) and consequently was based on a regular 50-year Federal Power Commission license. No difficulty in changing the terms of the contract to cover a longer period is anticipated as the Pacific Gas & Electric Co. has indicated its willingness to do so.

The districts propose to finance the project to the greatest possible extent from the sale of private bonds. To accomplish this it is necessary to segregate the revenues allocated to payment of private bonds and those allocated to payment of the Government loan. There is only a 1–1 coverage on the private bonds. The revenue allocated to their payment will be exactly equal to the amount required. There will be no surplus. Thus, any infringement on those revenues reduces by that amount the bonds that can be issued.

For the United States loan there is a two-way coverage (see exhibit D). The revenues from the existing Stanislaus and Melones powerplants will fully repay the loan by 1998 if the Pacific Gas & Electric Co. or any other operator has the right to operate the plants until that date. The right to this use is under the control of the United States. The second coverage is all revenue to be received after the 49th anniversary of the first production of power for commercial use by the project.

VI. FUNDS AVAILABLE FROM SALE OF BONDS

The contract with the Pacific Gas & Electric Co. (exhibit C) provides for the sale of power to April 30, 2000. That company has evidenced its willingness to extend this period if the necessary extension of its Federal Power Commission licenses are obtained. The guaranteed payments from the contract allocated

to retire private bonds (see par. V (b) hereof) will finance bonds as follows:

50-year bond period (47-year full power production period)

Interest rate:	*Amount of bonds revenue will amortize*
3½ percent	$46,481,000
3¾ percent	44,752,000
4 percent	43,119,000

(See exhibit E attached hereto.)

VII. THE FINANCING PROBLEM

The districts' financial advisers, Blyth & Co., Inc., point out that bond buyers who invest in securities of this type do so at interest rates that do not warrant any risk on their part. If there is any remote possibility that a situation could arise that would delay commencement of payment of the bonds and interest, the bonds will not be salable.

The revenue to be used to service the bonds will be obtained from the sale of electric energy to the Pacific Gas & Electric Co. and, of course, it will not pay for electric energy until the generators start turning (an estimated 3-year construction period will be required). Under the contract already signed, after the project is completed the power company assumes all risks and the payments continue to be made to the districts even though through some unforeseen cause the flow of power might be interrupted.

If the construction of the project should be delayed after the bonds are issued, through such conditions as war, strikes, availability of materials, etc., the construction period could necessarily extend for longer than the 3-year period contemplated. In that event there would be a shortage of revenue to meet bond obligations. The contractors will take the risk of loss due to such causes as rising cost of labor and material, and post 100-percent bonds to insure completion. Adequate reserve funds must, however, be provided against increased costs due to change orders that might be made by governmental authority for safety reasons, or delays, or overruns in quantities due to conditions that could not possibly be foreseen at the time bids are let.

VIII. ASSISTANCE REQUIRED BY GOVERNMENT LOAN

Our best advice from our financial advisors is that interest rates on the proposed bonds will be between 3½ percent and 4 percent. At 4 percent the situation is as follows:

Estimated cost of project	$47,647,000
Estimated contingency required to cover:	
(*a*) Overruns in construction costs	3,807,000
(*b*) Additional interest if construction is delayed	2,035,000
Total funds required to be available	53,489,000
Private financing available at 4 percent (47-year full power production period)	43,119,000
United States funds required to be available	10,370,000
Total funds	53,489,000

Bonds cannot be sold unless it is apparent to the buyers of the same that the aforementioned amount of $53,489,000 is available. However, in all probability, the total amount that will be expended will be the estimated cost of $47,647,000. In that event, only $4,528,000 of the United States appropriation would be disbursed. This latter amount would be reduced if the districts are able to sell their bonds at a rate of interest lower than 4 percent. Increased reserves for contingencies will, of course, improve the interest rate that can be anticipated on sale of private bonds and thereby reduce the amount of the United States loan that need be disbursed.

IX. LEGAL AUTHORITY

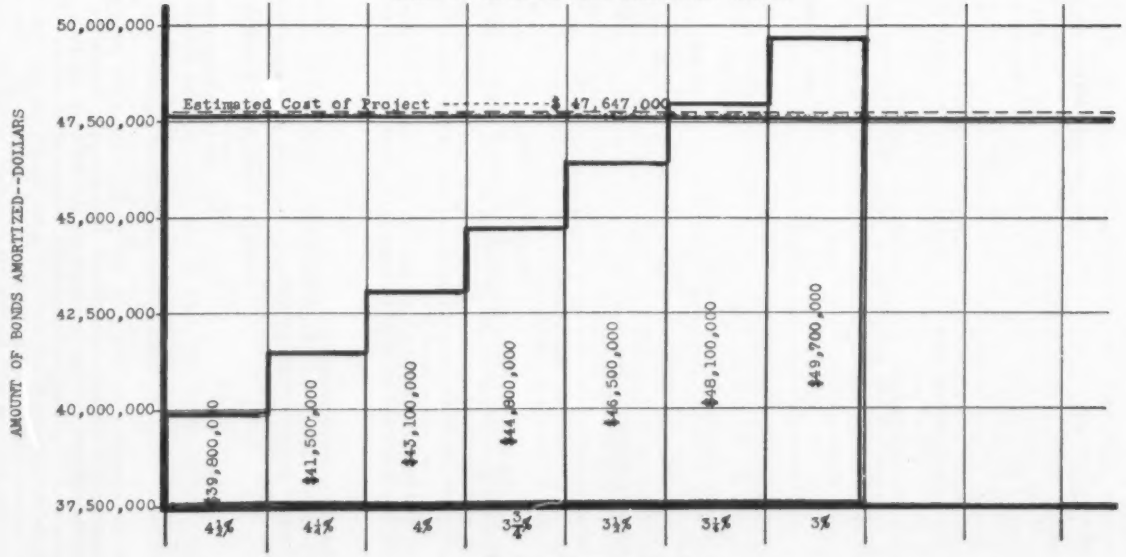
The legal authority of the districts to engage in such a project (arts. 1 and 3 of ch. 1 and art. 1 of ch. 2, pt. 5, division 11, Water Code of California) and to issue bonds to finance the same (ch. 1 and arts. 1, 2, and 6 of ch. 3, of pt. 9, division 11, Water Code of California) is well established.

EXHIBIT E

OAKDALE IRRIGATION DISTRICT & SOUTH SAN JOAQUIN IRRIGATION DISTRICT

TRI-DAM PROJECT--CALIFORNIA

CHART SHOWING AMOUNT OF BONDS WHICH THE GUARANTEED PAYMENTS UNDER PACIFIC GAS & ELECTRIC COMPANY CONTRACT WILL AMORTIZE IN 50 YEARS USING 47 YEARS AS FULL PRODUCTION PERIOD



The legal authority to borrow funds from the United States and to contract for repayment is to be found in chapter 2 of part 6, division 11, of the Water Code of California.

X. METHOD USED IN DETERMINING IRRIGATION ALLOCATION

The amount of the loan requested ($10,370,000) is the estimated sum required to permit of the private financing contemplated. It is also the amount of the cost of the project properly allocable to irrigation as computed by using the Bureau of Reclamation's standard formula for determining such allocations by the modified proportional benefit method. This amount does not include the cost of interest during construction. If interest during construction is included, the amount of cost allocable to irrigation is computed to be $11,541,000. Except for the limited amount of Federal funds used at the end of the construction period, the districts must pay interest during the construction period. Consequently, the higher figure would probably be justified.

A summary of the computations using the "Modified proportional benefit method" not including cost of interest during construction is as follows:

	Power	Irrigation	Total
Annual gross direct benefits at reservoir	$2,506,000	$1,120,000	$3,626,000
Less annual amortization payments for single-purpose items	770,000		770,000
Total	1,736,000	1,120,000	2,856,000
Less operation and maintenance expenses to single-purpose items	238,000		238,000
Attributable to joint facilities	1,498,000	1,120,000	2,618,000
Percent	57.21	42.79	100
Allocation of joint costs	$13,872,000	$10,375,000	$24,247,000
Single-purpose capital costs	19,330,000		19,330,000
Total	33,202,000	10,375,000	43,577,000

Supporting data

1. Estimated project cost (not including interest during construction):	
Power facilities	$19,330,000
Storage facilities	24,247,000
Total	43,577,000
2. Annual gross power revenues	2,506,000
	Acre-feet
3. Gross reservoir capacity	230,000
Holdover storage for record dry year	128,000
Average annual irrigation use	70,000

Dated May 15, 1954.

OAKDALE IRRIGATION DISTRICT,
Oakdale, Calif.
SOUTH SAN JOAQUIN IRRIGATION DISTRICT,
Manteca, Calif.

DESCRIPTION OF TRI-DAM PROJECT

On the reverse side[1] is a plan and profile map of the proposed storage development of the Oakdale and South San Joaquin Irrigation Districts on the Stanislaus River, commonly known as the Tri-Dam project. The development will be on the middle fork and main stream of the river. In addition to the units to be constructed, the waters will be utilized through the existing Stanislaus and Melones plants of the Pacific Gas & Electric Co. The combined storage of the 3 reservoirs will be 230,400 acre-feet, which will provide 100 percent irrigation within the districts in normal years, and, in addition, provide a substantial holdover storage for subnormal or dry years.

Donnells Dam is reached by a 3-mile access road connecting with State Highway 108 at a point about 40 miles east of Sonora. The structure will be a

[1] Not printed.

constant angle, concrete arch, flanked by a gate-controlled spillway around the left abutment. The dam will be 288 feet above stream bed with a crest length (arch) of 760 feet. The reservoir will have a gross storage capacity of 64,500 acre-feet and will cover an area of 425 acres. The Donnells Power Tunnel will be a horseshoe cross section, 12 feet by 13 feet, about 7.2 miles in length. The powerhouse will be located on the left bank of the river about one-fourth mile below the USFS bridge at Hells Half Acre. The powerplant installation will have a capacity of 54,000 kilowatts.

The Beardsley Dam is 6 miles by access road from a point on State Highway 108 about 30 miles east of Sonora. The structure will be an earth, gravel, and rock-fill type with a gated concrete spillway located at the right abutment. Height of the dam above stream bed will be 280 feet with a crest length of 820 feet, exclusive of spillway. The reservoir will have a gross storage capacity of 97,500 acre-feet covering an area of 720 acres. The powerplant will be located on the right bank of the river immediately below the dam and will have a capacity of 10,000 kilowatts.

An afterbay dam, approximately 30 feet in height and adequate to hold in excess of 250 acre-feet, will be constructed about 1 mile below the Beardsley powerplant and any sudden fluctuation in power releases will be reregulated to provide a more uniform flow in the stream below. Storage from both Donnells and Beardsley will be diverted at the Sandbar Diversion Dam of P. G. & E. into their 10-mile tunnel leading to the company's Stanislaus powerplant. The same water will be diverted at the districts' Melones Dam and used through the company's existing Melones powerplant. In both bases the water will be returned to the river and the districts will be paid substantially for the falling water benefits.

The Tulloch site is reached by 3 miles of access road leading from State Highway 120 at a point about 16 miles east of Oakdale. The gravity section concrete dam selected at this location will be 200 feet in height with a crest length of 1940 feet and will have a gross storage capacity of 68,400 acre-feet and a surface area of 1,260 acres. The powerhouse will be constructed at the base of the dam and will have a capacity of 17,000 kilowatts.

The districts' existing Goodwin diversion dam will be increased 7 feet in height to create an afterbay for the Tulloch plant of not less than 500 acre-feet. At this point water will be reregulated into the districts' canals for irrigation use within their respective districts.

The project will be financed by the sale of $50 million of revenue bonds payable solely from power revenue derived through a 45-year contract entered into between the Oakdale and South San Joaquin Irrigation Districts and the Pacific Gas & Electric Co. Lands within the districts will not and cannot be obligated in any way for the payment of any portion of this revenue bond issue. All plants will be owned, maintained, and operated by the districts and delivery of power will be made into the company's system adjacent to each powerplant.

TRI-DAM PROJECT CONTRACT

BETWEEN OAKDALE IRRIGATION DISTRICT AND SOUTH SAN JOAQUIN IRRIGATION DISTRICT AND PACIFIC GAS AND ELECTRIC COMPANY

Dated, July 9, 1952

THIS AGREEMENT made this 9th day of July 1952, made by and between PACIFIC GAS AND ELECTRIC COMPANY, hereinafter referred to as "Pacific" and OAKDALE IRRIGATION DISTRICT and SOUTH SAN JOAQUIN IRRIGATION DISTRICT, hereinafter referred to as "Districts".

WITNESSETH that:

1. This contract includes Appendix A, Definitions; Appendix B, Requirements and General Specifications for Tri-Dam Project; Appendix C, Operation Requirements; Appendix D, Table of Storage Requirements; Appendix E, Labor Index, and Appendix F, Maintenance Requirements. For clearness, words defined in Appendix A, other than proper names, are underlined in the text.[1]

2. Districts shall construct at their own risk and expense, and shall be the sole owners (under Federal Power Commission licenses) of Donnells Dam, Donnells Plant, Beardsley Dam, Beardsley Plant, Beardsley Afterbay Dam,

[1] For convenience in printing, italic type is used in lieu of underlining.

Tulloch Dam, Tulloch Plant, a new dam or alteration of the existing Goodwin Dam to create Tulloch Afterbay, *project communication facilities*, all roads required for access thereto and all necessary appurtenances for each of the foregoing.

Districts shall design, construct, purchase and install all structures, equipment, and facilities to meet in substance the requirements and specifications of Appendix B. All structures, equipment, and facilities constructed, purchased or installed by Districts shall be of a quality substantially equal to that constructed or installed by Pacific in its hydroelectric projects constructed during the last 25 years on Mokelumne River, Feather River and Pit River. Pacific shall make available to Districts for inspection at Pacific's office, plans and specifications of said plants of Pacific, and Districts may inspect any of such plants.

Districts shall submit to Pacific from time to time their general plans and specifications for all portions of the *project*. Pacific shall within 30 days after receipt of any such plans and specifications, advise Districts as to whether or not in its opinion such plans and specifications meet the foregoing requirements. Pacific shall have the right to inspect all work performed by or for Districts in constructing elements of the Tri-Dam Project. Neither approval by Pacific of any plans or specifications or inspection by it of any work hereunder shall relieve Districts of the responsibility of meeting the requirements and general specifications set forth in Appendix B, nor shall Pacific be responsible for strength, details of design, adequacy or capability of any structure, facility, or work.

3. Districts shall acquire and maintain all lands, easements, water rights, Federal and State permits, and all other rights and privileges necessary for the foregoing purposes and for the operation of their works and facilities in accordance with Appendix C.

4. Districts at their sole risk and expenses at all times during the term of this contract shall operate, in accordance with good engineering and operating practice, Donnells Dam, Donnells Plant, Beardsley Dam, Beardsley Plant, Beardsley Afterbay Dam, Tulloch Dam, Tulloch Plant, and Tulloch Afterbay as required by Appendix C.

4. Districts shall maintain at their own risk and expense all elements of the Tri-Dam Project in first class operating condition throughout the term of this contract and establish and maintain a maintenance reserve fund, as required by Appendix F.

6. Pacific shall construct, own, operate, and maintain, at its own risk and expense, transmission lines required to transmit power from Donnells Plant, Beardsley Plant, and Tulloch Plant into Pacific's transmission network. Pacific shall provide within its stations or plants, the necessary equipment for receiving communication from works and facilities of the Tri-Dam Project. Pacific shall acquire all lands, easements, Federal and State permits, and all other rights and privileges necessary to carry out the requirements of this paragraph, subject, however, to the provisions of paragraph 25.

7. Districts shall initially schedule *operable* dates for all facilities of the Tri-Dam Project for the same date, and shall subsequently, as work progresses, inform Pacific of any revision in the schedule date for each facility. Districts shall fix final scheduled *operable* dates and notify Pacific thereof 18 months in advance of the scheduled date for each power plant. Pacific shall complete transmission lines to each power plant on or prior to its said final date. Failure of Pacific to take power from an *operable* plant between its final date and the *full operation date* shall not relieve Pacific from payments provided for in subparagraph 9 (a), and until Pacific takes power the amount of energy which could have been generated in each plant during said period, while *operable*, with water actually bypassed or spilled around the plants shall be estimated and considered to have been delivered. Should any of Districts' power plants not be *operable* within 6 months subsequent to its said final date, due to causes other than Acts of God, war, strikes, unavailability of materials, acts of civil or military authorities, or other causes beyond the control of the Districts, then Districts shall pay Pacific at the rate following which is applicable to the non-*operable* plant or plants, for the period begining 6 months after said final date and ending when the plant or plants are *operable:*

(a) $595 per day for either Donnells Plant or Beardsley Plant, or for both together.

(b) $225 per day for Tulloch Plant.

Except as provided in this paragraph 7, Districts shall not be liable to Pacific for any delay prior to the *full operation date* in construction or installation of any facility or facilities of the Tri-Dam Project.

8. Districts shall sell and deliver to Pacific during the term of this contract all of the electric power and energy generated by Donnells Plant, Beardsley Plant, and Tulloch Plant, except the power and energy necessary for construction of the Tri-Dam Project prior to the *full operation date*, and for *project power plant use* before and after said date. Districts shall pay Pacific at its appropriate filed tariff rates for any power and energy used by Districts for purposes not so excepted, including but not limited to Districts' clubhouses. Districts' summer cabins, recreational facilities of Districts, and construction work by Districts on the project after the *full operation date*. Delivery of power and energy to Pacific shall be from a structure at the high tension disconnect switch at each power plant, except for such power and energy as Pacific shall request to be delivered to it for transmission at generator voltage, in which case such protective devices as Districts deem necessary shall be installed at Pacific's expense as part of the plant auxiliaries. All energy delivered hereunder to Pacific prior to the *full operation date* and any other energy which is to be paid for at a specified rate per kilowatt-hour under the terms of this contract, shall be metered on the low voltage side of the transformer bank.

9. Prior to the *full operation date* Pacific shall pay Districts:

(a) $.0027 per kilowatt-hour for energy delivered to it from Districts' Donnells, Beardsley and Tulloch plants; provided, however, that in the event that due to Acts of God, war, strikes, unavailability of materials, acts of civil or military authorities, or other causes beyond the control of Districts more than six months elapse between the time one or more of said plants become *operable* and the time all three become *operable* Pacific shall also pay Districts the value of the firm capacity available after said six months, from the *operable* plant or plants, if any such value exists. If the parties hereto do not agree as to the amount to be paid under the foregoing proviso either party may submit the matter to arbitration in accordance with this contract except that only one arbitrator shall be appointed and the Chairman of the Federal Power Commission shall be requested to appoint such arbitrator. In no case under said proviso (whether or not arbitrated) shall the total payment by Pacific exceed $.005 per kilowatt-hour (including the amount of $.0027 per kilowatt-hour above specified).

(b) At the following rates for water impounded by them and used through Pacific's Stanislaus and Melones plants which would not otherwise have been available to Pacific and for such use:

(1) $3.00 per acre foot for each acre foot of water impounded by Districts and use through Pacific's Stanislaus plant.

(1) $0.50 per acre foot for each acre foot of water impounded by Districts in Donnells and/or Beardsley Reservoirs and used through Pacific's Melones Plant.

10. Following the *full operation date* Pacific shall pay Districts the following amounts:

(a) $1,102,000 on each June 15 and December 15 following the *full operation date* to and including June 15, 1977; provided that the first such payment shall be $1,102,000 multiplied by the number of days in the *initial payment period* and divided by 182.

(b) $1,034,000 on each December 15 and June 15 following June 15, 1977, to and including December 15, 1985.

(c) $732,000 on each June 15, and December 15 following December 15, 1985, to and including December 15, 1999.

(d) $548,000 on April 30, 2000.

11. Following the *full operation date* Pacific shall also pay Districts

(a) On each June 15 and December 15 following the *full operation date* to and including December 15, 1999, the sum of $151,000 multiplied by the *labor index;* provided that the first such payment shall also be multiplied by the number of days in the *initial payment period* and divided by 182.

(b) On April 30, 2000, the sum of $113,000 multiplied by the *labor index.*

12. For each day during the term of this contract following June 15, 1977, that Pacific has the right to operate for its own benefit Melones Plant, Pacific shall pay Districts $372.60.

13. For each day during the term of this contract following December 15, 1985, that Pacific has the right to operate for its own benefit Stanislaus Plant, Pacific shall pay Districts $1,654.79.

14. Amounts due from Pacific under paragraphs 12 and 13 shall be due and payable each June 15 and December 15 for the preceding six months period and shall be in addition to the payments to be made under paragraphs 10 and 11.

15. Pacific's obligations to Districts hereunder shall be reduced by $2.45 for each acre foot of water taken from Districts by Tuolumne County Water District No. 2, under the latter's agreement with Districts dated June 27, 1951.

16 (a) Pacific's obligations under paragraphs 10 and 11 shall not be dependent upon all or any part of the Tri-Dam Project continuing to be *operable* nor shall its obligations under paragraphs 10, 11, 12, and 13 be dependent upon the ability of Pacific to take energy or water produced by or made available from the *project*. This provision, however, shall not be deemed to relieve Districts of any of their obligations hereunder.

(b) Pacific may offset against any amounts due from it to Districts hereunder any amounts due to Pacific from Districts by reason of this contract or any breach thereof, except that no offset shall be applied by Pacific to reduce the payments due from it to Districts under the provisions of paragraph 10.

17 (a) The obligations of Pacific and Districts to each other hereunder shall constitute full consideration for all benefits to be received hereunder including all headwater benefits by reason of any facilities of the parties now existing or to be constructed hereunder. In the event that, by reason of any requirement of the Federal Power Commission or other governmental authority having jurisdiction so to do, either party hereto is required to pay headwater benefits to the other by reason of such facilities, the amounts to be paid by Pacific to Districts hereunder shall be reduced by the amount of any such headwater benefit payment made to Districts or increased by the amount of any such headwater benefit payment received from Districts.

(b) No improvement or enlargement of Pacific's Stanislaus, Melones or Spring Gap Plants, (not involving additional storage or water supply) shall result in any increase in Pacific's payments hereunder.

(c) The payments to be made hereunder do not cover or take into account benefits that may be received by either party hereto as a result of the development of an undeveloped head, or the development of additional storage or water supply, and compensation for any such benefits shall be the subject of a new or supplemental contract.

18. One-half of any amounts payable by Pacific to Districts hereunder shall be paid to each District and Pacific's obligation as to each such amount shall be fully discharged thereby; provided that Districts may request, in writing, some other reasonable mode of payment in which case Pacific's obligation shall be fully discharged by payment in accordance with such request.

19. Pacific shall have no obligation to determine rights as between the Districts as to any matters involved herein. In the event that Pacific shall be entitled to damages from Districts for non-performance of any obligation of this contract each District shall be obligated as to one-half of the amount thereof without regard to its rights, if any, against the other District, which rights shall remain unaffected hereby.

20. Except to the extent inconsistent herewith, the *Melones Contract*, shall remain in full force and effect.

21. Districts shall maintain and defend their respective titles to and right to exercise all water rights necessary or useful to the operation of Donnells, Beardsley, Stanislaus, Melones and Tulloch Plants and neither District shall voluntarily convey, transfer or in any manner encumber (except for security purposes in connection with Districts' financing of the Tri-Dam Project) any of such titles or rights without the written consent of Pacific. This contract shall not affect in any way the rights of the parties hereto among themselves with respect to such water rights except that the parties consent to operation hereunder in accordance with Appendix C insofar as such operation may be inconsistent with existing water rights.

22. Districts shall permit all roads and rights of way owned or controlled by them to be used by Pacific, without cost or expense, for operation and maintenance of any works or facilities of Pacific now in existence or hereafter constructed or installed, and for the construction of Pacific's transmission line and any other works or facilities for use in connection with the Tri-Dam Project. Pacific shall permit use by Districts of its existing roads and rights of way without cost or expense for the purpose of constructing and maintaining facilities of the Tri-Dam Project.

23. Districts shall indemnify and hold Pacific harmless from all liability to third persons for bodily injury or property damage resulting from construction, ownership, operation, or maintenance, or from failure of, any of the Districts' works or facilities used in connection with the *Tri-Dam Project*.

Pacific shall indemnify and hold Districts harmless from all liability to third persons for bodily injury or property damage resulting from construction, own-

ership, operation, or maintenance, or from failure of any of its works or facilities used in connection with the *Tri-Dam Project*.

24. This contract shall be effective upon due execution by the parties hereto.

25. Pacific shall diligently proceed to take all necessary action to secure licenses and permits from the United States where required for construction of *project transmission lines*, provided, however, that Pacific shall not be required to accept or agree to any conditions or obligations in connection with any such permits or licenses which Pacific deems unreasonably burdensome. If Pacific shall have proceeded diligently but shall not have secured such licenses and permits on terms satisfactory to it prior to the expiration of 12 months from the date of execution hereof Pacific shall have no further obligation to Districts under this contract and shall not be liable to Districts by reason of any expenses incurred or obligations undertaken for the performance by them of this contract nor for any damages suffered as a result of the termination of Pacific's obligations hereunder. Upon securing all such required licenses and permits, Pacific shall furnish Districts with its certificate to that effect. Such certificate shall be binding and conclusive upon Pacific and thereafter there shall be no termination of Pacific's obligations under this contract by reason of any provisions of this paragraph.

26. Districts intend to finance construction of the Tri-Dam Project by the issue and sale of revenue bonds, and Districts shall diligently proceed with all necessary action to complete such financing, provided, however, that Districts shall not be required to accept or agree to any conditions or obligations in connection with any such financing which they deem unreasonably burdensome. If Districts shall have proceeded diligently but shall not have completed such financing on terms satisfactory to them prior to the expiration of 24 months from the date of execution hereof, Districts shall have no further obligation to Pacific under this contract and shall not be liable to Pacific by reason of any expenses incurred or obligations undertaken for the performance by it of this contract nor for any damages suffered as a result of the termination of Districts' obligations hereunder. Upon completion of such financing, Districts shall furnish Pacific with their certificate to that effect. Such certificate shall be binding and conclusive upon Districts and thereafter there shall be no termination of Districts' obligations under this contract by reason of any provision of this paragraph.

27. Except as provided in paragraphs 25 and 26, this contract shall remain in effect so long as Districts shall hold licenses under the Federal Power Act (or equivalent rights permitting full performance by them of this contract) for Donnells Dam and Plant, Beardsley Dam and Plant, and Tulloch Dam and Plant but not beyond April 30, 2000. Termination of this contract as a result of the loss by Districts of rights necessary for the full performance of this contract with respect to Donnells Dam or Plant, Beardsley Dam or Plant, or Tulloch Dam or Plant shall not affect obligations of either party accrued hereunder prior to such termination, but no further obligation shall accrue subsequent to the date of such termination and final payments as of the date of termination shall be prorated as may be appropriate.

28. No voluntary assignment of this contract, except for security purposes in connection with Districts' financing of the Tri-Dam Project, shall be effective without the written consent of the other parties hereto.

29. In the event that all of the construction of the Tri-Dam Project is to be financed by one of the Districts pursuant to authorization of its electors and the other District gives all necessary consent and transfers all necessary property, rights, privileges, permits, and licenses to the first District, Pacific shall agree to appropriate amendments to this contract to substitute the first District for Districts.

30. Any dispute that may arise hereunder between Districts and Pacific shall, upon the written request of either party to the other, be submitted to and decided by arbitration. Each of the parties shall, within 30 days after giving or receiving such written notice, appoint one arbitrator, and if either party fails to appoint an arbitrator within such time, he shall be appointed by a Superior Court of the State of California in accordance with the California Code of Civil Procedure. At any time that either arbitrator concludes they cannot agree, the two arbitrators shall appoint a third arbitrator or if they cannot agree upon a third arbitrator, he shall be appointed by said Superior Court in accordance with said code. A decision by two of the arbitrators shall be binding on the parties. If a decision cannot be reached within 90 days after appointment of the third arbitrator, on written notice by either party to the other, the arbitrators' authority shall terminate and either party may submit the matter to an appropriate court for decision.

Each party shall bear the expense and fees of the arbitrator appointed by it and its own expenses involved in the arbitration. The expenses and fees of the third arbitrator and all other expenses of arbitration shall be borne equally by Pacific and Districts.

IN WITNESS WHEREOF, on the date first above written the parties hereto have subscribed this agreement by their officers thereunto duly authorized.

OAKDALE IRRIGATION DISTRICT
By EDWIN KOSTER, *President*
[SEAL] And by C. W. QUINLEY, *Secretary.*
SOUTH SAN JOAQUIN IRRIGATION DISTRICT
By CARL H. PETERSON, *President*
[SEAL] And by S. L. STEELE, *Secretary.*
PACIFIC GAS AND ELECTRIC COMPANY
By N. R. SUTHERLAND, *Vice President and General Manager*
[SEAL] And by RAYMOND KINDIG, *Secretary.*

APPENDIX A—DEFINITIONS

When used in this contract the following terms shall have the meanings hereinafter set forth.

FACILITIES TO BE CONSTRUCTED AND OWNED BY DISTRICTS

A–1. *"Tri-Dam" Project, or Project.*—An irrigation and power development on the Stanislaus River including Donnells Dam, Donnells Plant, Beardsley Dam, Beardsley Plant, Beardsley Afterbay Dam, Tulloch Dam, Tulloch Plant, Tulloch Afterbay, and appurtenant facilities.

A–2. *Donnells Dam and Donnells Reservoir.*—A dam on the Middle Fork of Stanislaus River immediately downstream from Donnells Flat and the reservoir resulting from the construction of such a dam.

A–3. *Donnells Plant.*—A hydroelectric generating plant and appurtenant facilities located on the Middle Fork of Stanislaus River, using the water diverted at Donnells Dam.

A–4. *Beardsley Dam and Beardsley Reservoir.*—A dam on the Middle Fork of Stanislaus River immediately downstream from Beardsley Flat and the reservoir resulting from the construction of such a dam.

A–5. *Beardsley Plant.*—A hydroelectric generating plant and appurtenant facilities located immediatley downstream from Beardsley Dam.

A–6. *Beardsley Afterbay Dam and Beardsley Afterbay Reservoir.*—A dam approximately one mile downstream from Beardsley Dam for the purpose of reregulating discharge from or past Beardsley Powerplant and the reservoir resulting from the construction of such a dam.

A–7. *Tulloch Dam and Tulloch Reservoir.*—A dam on the Stanislaus River approximately one and one-half miles upstream from existing Goodwin Dam and the reservoir resulting from the construction of such a dam.

A–8. *Tulloch Plant.*—A hydroelectric generating plant and appurtenant facilities located immediately downstream from Tulloch Dam.

A–9. *Tulloch Afterbay.*—An afterbay downstream from Tulloch Dam to be created by raising the existing Goodwin Dam or by constructing a new dam.

A–10. *Project Communication Facilities.*—Facilities required for communication between units of the Tri-Dam Project and to connect to Pacific's communication system.

FACILITIES ALREADY CONSTRUCTED AND OWNED BY DISTRICTS

A–11. *Melones Dam and Melones Reservoir.*—Districts' existing dam and reservoir on the Stanislaus River generally known by these names.

A–12. *Goodwin Dam.*—Districts' existing diversion dam on the Stanislaus River.

A–13. *Woodward Reservoir.*—The existing reservoir or any enlargement thereof owned by the South San Joaquin Irrigation District.

FACILITIES TO BE CONSTRUCTED AND OWNED BY PACIFIC

A–14. *Project Transmission Lines.*—Electric transmission lines and facilities required to transmit power from Donnells Plant, Beardsley Plant, and Tulloch Plant into Pacific's transmission network.

FACILITIES ALREADY CONSTRUCTED AND OWNED BY PACIFIC

A–15. *Stanislaus Plant.*—Pacific's hydroelectric generating plant generally known by that name, and appurtenant facilities, located on the Middle Fork of Stanislaus River.

A–16. *Melones Plant.*—Pacific's hydroelectric generating plant generally known by that name, and appurtenant facilities, located on the Stanislaus River downstream from Melones Dam.

A–17. *Spring Gap Plant.*—Pacific's hydroelectric generating plant generally known by that name, and appurtenant facilities, located on the Middle Fork of Stanislaus River.

OTHER TERMS USED HEREIN

A–18. *Sand Bar.*—A point on the Middle Fork of Stanislaus River between Spring Gap Plant and the diversion to Pacific's Stanislaus tunnel at which the United States Geological Survey has located a stream flow gauging station known as the Sand Bar Flat Station.

A–19. *Storage.*—The quantity of water held in reservoirs.

A–20. *Operable.*—With respect to power plant; capable of continuous delivery of its full rated capacity at the then existing head of water into Pacific's transmission lines.

With respect to Donnells and Beardsley Dams: capable of operation in accordance with Appendices B and C, and having *storage* in Donnells Reservoir and a total *storage* in both Donnells and Beardsley Reservoirs equal to or greater than the corresponding amounts of *storage* specified in columns (3) and (6) in Appendix D for the end of the then current month.

With respect to Tulloch Dam: having a water surface in Tulloch Reservoir at elevation 431 corresponding to approximately 12,000 acre-feet of *storage.*

With respect to Beardsley Afterbay Dam and Tulloch Afterbay Dam: all structures, equipment, and facilities completed and capable of operation in accordance with Appendices B and C.

A–21. *Elevation.*—Height, in feet, above U. S. G. S. datum.

A–22. *Full operation date.*—The first day that Donnells Dam, Donnells Plant, Beardsley Dam, Beardsley Plant, Beardsley Afterbay Dam, Tulloch Dam, Tulloch Plant, and Tulloch Afterbay are all constructed and *operable.* Donnells Dam, Bardsley Dam, and Tulloch Dam shall be deemed constructed when they are capable of storing water up to their respective spillway crests.

A–23. *Initial Payment Period.*—The period from the *full operation date* to and including the next succeeding June 15 or December 15, whichever is the first to occur.

A–24. *Labor Index.*—The index described in Appendix E.

A–25. *Melones Contract.*—The contract between Districts and Company dated January 2, 1925.

A–26. *Project power plant use.*—Use of power by Districts for operating Donnells, Beardsley, and Tulloch Plants and Beardsley and Tulloch Dams, including housing for operating personnel at such plants and dams.

Appendix B—Requirements and General Specifications for Tri-Dam Project

The following requirements and specifications cover the general conditions for the major structures, equipment, and facilities of the Tri-Dam Project. In addition to those herein described, the *project* shall contain all structures and facilities for production of power and operation of plants substantially equivalent to those which Pacific had constructed or installed in its own recently constructed hydroelectric projects. Requirements and specifications contained herein may be changed by mutual consent of the parties.

B–1. Dams and Reservoirs—

(a) *General for all Dams and Reservoirs.*—Dams shall be designed and constructed according to accepted engineering principles and must be approved by the State Engineer. Dams shall include cutoffs excavated into solid bedrock and backfilled with concrete and/or a grout curtain in bedrock depending upon the type of dam. All features of dams shall be so constructed as to minimize the leakage of water through or around the dams and shall have adequate provision for any movement or settlement of the structure or its foundations which would cause leakage to occur. Crests of Beardsley and Tulloch Dams shall have a minimum of 5 feet of freeboard above the water surface created by the maxi-

mum design flood. Crest gates shall provide a minimum of one foot freeboard above the maximum storage elevation and shall be provided with water seals to prevent leakage. All crest gates shall be power operated. Each outlet from reservoirs shall be protected by a grizzly or trashrack to prevent entrance of logs and other debris into the conduits.

(b) *Specific Requirements for Donnells Dam and Reservoir.*—Donnells Dam shall be situated in Section 35, Township 6 North, Range 18 East, M. D. B. & M. The reservoir shall have a gross capacity of not less than 64,500 acre-feet and a net usable capacity above elevation 4720 of not less than 62,000 acre-feet. The spillway shall have a discharge capacity of not less than 67,000 cubic feet per second. A bypass conduit and valve of not less than four foot diameter shall be provided to permit water to be drawn to or below elevation 4650 for the purpose of performing such maintenance as may be required.

(c) *Specific Requirements for Beardsley Dam and Reservoir.*—Beardsley Dam shall be situated in Sections 14 and 15, Township 4 North, Range 17 East, M. D. B. & M. The reservoir shall have a gross capacity of not less than 97,500 acre-feet and a net usable capacity above elevation 3261 of not less than 77,500 acre-feet. The spillway shall have a discharge capacity of not less than 75,000 cubic feet per second with the reservoir water surface at the dam not higher than elevation 3397. Bypass facilities of a minimum of four foot diameter shall be provided so that water may be drawn to or below elevation 3145 for the purpose of performing such maintenance work as may be required.

(d) *Specific Requirements for Beardsley Afterbay Dam and Reservoir.*—Beardsley Afterbay Dam shall be situated approximately one mile downstream from Beardsley Dam and shall be a type approved by the State Engineer. The net usable storage above the outlet valve or gate shall be not less than 250 acre-feet. The outlet valve or gate shall be capable of discharging not less than 400 cubic feet per second with the minimum operating level in the afterbay. Provision shall be made for operation of the valve or gate from the Beardsley Power House for the purpose of regulating water for power and other purposes.

(e) *Specific Requirements for Tulloch Dam and Reservoir.*—Tulloch Dam shall be situated in Section 1, Township 1 South, Range 12 East, M. D. B. & M. The reservoir shall have a gross capacity of not less than 68,400 acre-feet and a net usable capacity above elevation 431 of not less than 56,400 acre-feet. The spillway shall have a discharge capacity of not less than 150,000 cubic feet per second.

(f) *Specific Requirements for Tulloch Afterbay.*—Tulloch Afterbay Dam shall be located downstream from Tulloch Dam at or near the location of the existing Goodwin Dam. The afterbay shall have a useful regulating capacity of not less than 500 acre-feet and shall have power operated gates for reregulating water into the Districts' canals.

B–2. Tunnels—

(a) *General Requirements for all Tunnels.*—Tunnels shall be designed to withstand the full head which will be imposed on them and shall be lined in all locations requiring timber supports, or in locations where cracks or seams which would permit leakage are evident. Pressure tunnel shall be lined a minimum of 50 feet on either side of each adit. All lined pressure tunnel shall be thoroughly pressure grouted. All adits shall be plugged with concrete for a minimum distance of 25 feet from the tunnel wall and shall be thoroughly pressure grouted. Where practicable, access shall be provided through the adit plugs to simplify future tunnel maintenance work, Except as otherwise provided tunnels shall be reinforced for the full head in all locations where the distance to ground surface is less than the static head and in other locations where necessary to prevent excessive leakage and/or failures.

(b) *Specific Requirements for Donnells Tunnel.*—The pressure tunnel between Donnells Reservoir and the upper end of the Donnells penstock shall be of such a size and shape that the total head loss through intake and tunnel together with penstock head loss shall not exceed 134 feet when delivering 650 cubic feet per second to the Donnels Plant. The invert of the tunnel at the reservoir end shall be not higher than elevation 4702 and the tunnel shall be driven on a uniform grade for its full length and shall have sufficient fall to permit satisfactory operation of the surge tank hereinafter described. Tunnel shall be lined and reinforced in all locations where the distance to ground surface in any direction from the tunnel centerline is less than the maximum static head. At or near the intake end of the tunnel, there shall be provided a valve or gate for the purpose of shutting off tunnel flow. This valve or gate shall be power operated and shall be capable of opening or closing under maxi-

mum unbalanced pressure. An emergency gate, valve, or device shall be installed upstream from the main gate or valve to permit shutting off tunnel flow for the purpose of performing maintenance or inspection work on the main gate or valve. A rock trap shall be provided in the tunnel to prevent passage of rocks into the penstock. There shall be no unlined tunnel between the trap and the penstock.

(c) *Specific Requirements for Beardsley Tunnel.*—The tunnel between Beardsley Reservoir and the upper end of Beardsley penstock shall be a minimum of 15 feet in diameter for unlined sections or gunite-lined sections and a minimum of 13-foot diameter for concrete-lined sections. The sill of the intake structure within Beardsley Reservoir shall be not higher than elevation 3,190. The tunnel shall be fully lined and reinforced at all points downstream from the axis of the dam where the ground cover in any direction is less than 170 feet. At some point in the tunnel near or upstream from the axis of the dam there shall be provided a valve or gate for the purpose of shutting off tunnel flow. This valve or gate shall be power operated and shall be capable of opening or closing under maximum unbalanced pressure.

(d) *Specific Requirement for Tulloch Tunnel.*—Tunnel between Tulloch Reservoir and Tulloch Plant shall be of such a size and shape that the total head loss through intake and tunnel together with penstock head loss shall not exceed 3.5 feet when delivering 1,620 c. f. s. to the Tulloch Plant. The invert of the tunnel at the reservoir end shall be not higher than elevation 415. The tunnel shall be fully lined and reinforced at all points downstream from the axis of the dam where ground cover is less than 120 feet. The tunnel shall be equipped with a gate or valve for the purpose of shutting off tunnel flow. This valve or gate shall be power operated and shall be capable of opening or closing under maximum unbalanced pressure.

B–3. Surge tank for Donnels Tunnel

The surge tank shall be located at or near the upper end of the Donnells penstock and shall be of proper dimensions and arrangement to permit acceleration and deceleration of water in the tunnel and penstock for the following conditions.

(a) *For Donnels Reservoir at Minimum Operating Level of 4,720.*—

(1) Water to be accelerated from a state of zero flow to a flow of 650 cubic feet per second within a period of one minute.

(b) *For Donnells Reservoir at Maximum Level.*—

(1) Water to be decelerated from a flow of 700 cubic feet per second to zero flow within a period of one minute.

(2) Water to be decelerated from a flow of 700 cubic feet per second to zero flow at a shutoff rate determined by the automatic closing of valves or gates located downstream from the surge tank.

In all cases, both for acceleration and deceleration of water, the surge tank shall be adequate to care for flow changes occurring within the time specified or for any longer period of time.

B–4. Penstocks

(a) *General for All Penstocks.*—The design and construction of penstocks shall conform to "The American Society of Mechanical Engineers Rules for Construction of Unfired Pressure Vessels," 1950 Edition. Pressures used in the design of penstocks shall include proper allowance for pressure rise or water hammer except that this allowance at any point on the penstock pipe shall be not less than 10 percent of the maximum static head on the pipe at that point. All welded joints in penstocks shall be radiographed and stress relieved. Expansion joints shall be provided in all penstocks not entirely encased in concrete.

(b) *Specific Requirements for Donnells Penstock.*—The Donnells penstock shall be of such diameters and degree of interior roughness that the total head loss through penstock together with loss through tunnel intake and tunnel shall not exceed 134 feet when delivering 650 cubic feet per second to the Donnells Plant. The penstock shall extend into the tunnel a minimum distance of 40 feet and shall be connected to a steel liner pipe. The liner pipe shall extend into the tunnel a distance such that the vertical cover of ground above the pipe is equal to the maximum static head on the pipe. The liner pipe shall be adequately reinforced with stiffening ribs and shall be encased in concrete. The liner pipe shall be of a thickness such that together with the surrounding reinforcing hoops, the pipe and reinforcing steel can carry the full maximum static head of water. The liner pipe portion of the tunnel shall be thoroughly pressure grouted. The penstock shall be protected against collapse from external pressure by the instal-

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lation of standpipes or air valves. Air valves, if used, shall be of a design which gives positive operation at freezing temperatures. A penstock shutoff valve shall be installed at or immediately below the tunnel portal. This valve shall be arranged so that it may be operated from the powerhouse for closing only and so that it may be adjusted to trip automatically for flows between 10 and 30 percent above normal operating flow.

A bypass pipe and valve shall be installed around the penstock shutoff valve for the purpose of filling the penstock without opening the penstock shutoff valve.

(c) *Specific Requirements for Beardsley Penstock.*—The Beardsley penstock shall be 90-inch minimum inside diameter and shall be anchored into the tunnel concrete a minimum distance of 20 feet. The concrete and the rock formation surrounding the penstock shall be thoroughly pressure grouted to prevent leakage.

(d) *Specific Requirements for Tulloch Penstock.*—The Tulloch penstock shall be of such diameter and degree of interior roughness that the total head loss through penstock together with loss through intake, gates, valves, bends, etc., shall not exceed 3.5 feet when delivering 1,620 cubic feet per second to Tulloch Plant.

B–5. Powerplant buildings

(a) *General for all Buildings.*—Buildings shall provide adequate shelter for operating personnel and for all equipment which would be damaged by exposure and shall have sufficient floor area so that the necessary maintenance tasks may be performed. Fireproof construction shall be used for all roofs and exterior walls.

(b) *Specific Requirements for Donnells Plant Building.*—The centerline of nozzles shall be set at elevation 3,435 with generator floor accordingly above. Areas below elevation 3,440 shall be designed to withstand full external hydraulic and/or backfill pressures.

(c) *Specific Requirements for Beardsley Plant Building.*—The generator floor of the Beardsley Plant shall be set a minimum of 5 feet above the backwater level created by a 75,000-cubic-foot-per-second flood spilling over Beardsley Dam and Beardsley Afterbay Dam. All areas below the generator floor shall be designed to withstand full external hydraulic and/or backfill pressures and if necessary shall be anchored or keyed to bedrock to prevent flotation of the structure.

(d) *Specific Requirements for Tulloch Plant Building.*—The generator floor of the Tulloch Plant shall be set a minimum of 5 feet above the backwater level created by a 150,000-cubic-foot-per-second flood spilling over Tulloch Dam and Tulloch Afterbay Dam. All areas below generator floors shall be designed to withstand full external hydraulic and/or backfill pressures and if necessary shall be anchored or keyed to bedrock to prevent flotation of the structure.

B–6. Plant installation

(a) *Donnells Plant.*—Donnells Plant shall have an installed capacity which will with water use of 650 cubic feet per second generate not less than 54,000 kilowatts with Donnells Reservoir at minimum elevation of 4,720.

(b) *Beardsley Plant.*—Beardsley Plant shall have an installed capacity of not less than 10,000 kilowatts and shall be capable of generating not less than 3,000 kilowatts with Beardsley Reservoir at minimum elevation 3,261.

(c) *Tulloch Plant.*—Tulloch Plant shall have an installed capacity of not less than 17,000 kilowatts and shall be capable of generating not less than 1,500 kilowatts with a flow of not more than 320 c. f. s. and with Tulloch Reservoir at minimum elevation of 431.

B–7. Turbines

(a) *General for all Turbines.*—All turbines shall include a turbine shaft, hollow bored to not less than 6 inches diameter to permit passing a cable for lifting purposes. A flange shall be provided for generator coupling, and one oil lubricated guide bearing is required.

Each turbine shall be equipped with a hydraulic governor and individual oil pressure sets with duplicate oil pumps. Governor shall furnish sensitive speed control under all conditions of load and both governors and oil pressure sets shall conform to the latest "AIEE–ASME Specification for Speed Governing of Hydraulic Turbine."

Each turbine shall be protected by an hydraulically operated shutoff valve installed in the penstock just ahead of the unit and shall have bypass facilities for filling scroll or spiral case without opening the shutoff valve. Provision shall be made for operation of the valves at all times.

All strainers shall be installed in duplicate to permit cleaning without shutting down the unit.

All sliding or friction surfaces under water shall have nonferrous facings.

Acceptance tests to determine the efficiency of units shall be by either the Allen Salt Velocity Method or by the Gibson Method.

Standard spare parts and special tools required at each plant shall be provided as follows: one device for lifting runners by cable through hollow turbine shaft; two complete sets of packing for governors, for governor oil pumps, for servomotors, for needle control stems where used, etc.; two complete sets of ball bearings as used on governor flyball units, on oil pumps, etc.; one complete set of wrenches for all bolts larger than 1 inch in diameter, and any special tools required for assembling or dismantling the unit.

(b) *Specific Requirements for Donnells Turbine.*—The turbine shall be of the vertical, multi-nozzle impulse type. It shall deliver not less than 74,500 brake horsepower at 1,151 ft. net head when passing not more than 650 c. f. s. It shall operate successfully at full load over a range of (1,151 to 1,325) net effective heads and a maximum static head of 1,481 feet. The point of maximum efficiency shall be above 80% of full load.

The turbine shall be provided with adjustable needles and jet deflectors, both to be controlled by oil pressure servomotor operation. The deflector servomotor shall operate full stroke in 2 seconds; the needle servomotor shall be adjustable for controlling the time of operation with additional adjustment for the no-load to fully closed position in the closing direction. Mechanical locks for securing the servomotors at either end of the stroke are required. The deflectors shall be designed for continuous deflection of the maximum jets and so balanced with springs or other means so that they will be fully deflected in event of oil pressure failure.

The needles individually shall be conveniently removable from active service and the operation of the turbine shall be suited to any combination of needle operation. The vertical walls of the discharge pit shall be lined with steel securely anchored to concrete and fitted with energy absorbers designed to disperse the jets without distress in any deflected or runaway position.

The turbine shall be equipped with a servomotor operated turbine shutoff valve in the penstock which will close under any emergency condition of flow. It shall be interlocked to prevent opening under unbalanced pressure. It shall be equipped with mechanical locks to fix it in either the "Open" or "Closed" position. Means shall be available for operating the valve while the penstock is empty.

Spare parts required for Donnells turbine in addition to those required at all plants shall be provided as follows: two completely machined buckets, special reamers as required for bucket bolts, one renewable needle point, one renewable nozzle tip with seat ring, and one bearing shell for turbine shaft.

(c) *Requirements for Beardsley and Tulloch Turbines.*—

(1) *Specific Requirements Applying to both Beardsley and Tulloch Turbines.*—The head under which units will operate most efficiently shall be the approximate mean between the maximum and minimum heads for each unit and for this mean head the point of maximum efficiency shall be above 80 percent of full load.

Renewable stainless steel sleeves for packing glands shall be provided on each unit. The runners shall be cast steel with removable steel wearing rings. The stationary wearing rings shall also be removable. Four feeler holes are required for access to wearing ring clearance. Renewable wearing plates for the turbine wickets are desirable.

Servomotors shall have sufficient capacity to fully open or close the wickets in a period of 3 seconds under normal pressure and flow conditions. The overall time shall be capable of adjustment and a means provided for retardation of the movement from the zero load to the fully closed position. Locking devices are required to hold the servomotors in either end of the stroke against full oil pressure.

Turbine shutoff valves shall be operated from a potential power source independent of the station A-C power supply and shall be interlocked against opening to an empty casing. There shall be provided an auxiliary means of operation. Locking devices shall be provided for securing in the open or closed position if hydraulically operated.

Casings shall be equipped with accessible manholes not less than 20 inches in diameter; also drains sufficient to handle any reasonable butterfly valve leakage.

Draft tubes shall be of plate steel with provision for completely unwatering. There shall be provided removable sections for runner removal and two diametrically opposite manholes as high above tailwater elevation as possible.

Spare parts required at both Beardsley and Tulloch plants in addition to those required at all plants shall be provided as follows: one complete guide bearing shell, one demountable sleeve for shaft, one set of wearing rings, two wicket gates with sleeves for spindles and lever arms, and ten yield links.

(2) *Specific Requirements for Beardsley Turbine.*—The Beardsley turbine shall be a vertical Francis type, rated not less than 14,000 horsepower at 258 ft. net effective head, 300 RPM (subject to manufacturer's determination of most efficient speed).

This turbine shall operate successfully over a variable head of from 124 ft. net effective to 258 ft. net effective. It shall pass 395 c. f. s. of water at 124 ft. effective head, and develop not less than 4,320 B. H. P. with 395 c. f. s. of water at 124 ft. head.

(3) *Specific Requirements for Tulloch Turbine.*—There shall be two vertical Francis type turbines for the Tulloch Plant rated not less than 12,000 horsepower each at 153 ft. net effective head, 249 RPM (subject to manufacturer's determination of most efficient speed) when using 810 c. f. s. each.

The turbines shall operate successfully over a variable head of from 74 ft. net effective to 153 ft. net effective. Each turbine shall pass not less than 320 c. f. s. of water at 74 ft. net effective head and develop not less than 2,150 B. H. P. with 320 c. f. s. of water at 74 ft. effective head.

B–8. Generators

(a) *General for all Generators.*—Generators shall be vertical shaft machines for direct connection to turbines. Each generator shall be totally enclosed with surface coolers for 77° water. Each generator shall be equipped with CO 2 fire protection actuated by differential relay action, with hollow generator shaft having minimum diameter bore of 6", and with a thrust bearing above the generator and two generator guide bearings. The armature windings shall be star connected with six leads brought out, the two groups of three to be diametrically opposite and individually spaced not less than 20 inches. Class B insulation is required for both armature and the field windings, the latter to be composed of asbestos and/or mica.

Windings shall be mechanically braced to withstand the stress due to a balanced 3-phase short circuit. Not less than 8 A. I. E. E. standard 10 ohm resistance temperature detectors shall be included in the windings of each machine. The temperature guarantees shall be based on an ambient temperature of 40° C. and the rise shall not exceed 60° C. for both the armature and the field windings at rated load and with the voltage either 5% above or below rated voltage. The stator frames shall extend below the floor lines to a level sufficient to include opening through them for the return air to the rotors. Sufficient strength and anchorage shall be provided to care for full short circuit torque of the machines.

Pits beneath the generators shall be of sufficient diameter to permit passage of the turbine parts. There shall be included a direct connected exciter for each generator with a current rating 10% in excess of the generator field requirements and automatic rheostatic type voltage regulators suitable for complete control of the generator voltage without the use of a generator field rheostat. Rotors shall be equipped with amortisseur windings and shall, including the direct connected exciter, be designed to withstand the forces due to turbine runaway speed without distortion.

Standard spare parts shall be provided at each plant as follows: 15% of the total number of armature coils in the machine, one field coil (if all poles are not interchangeable, provide one of each type), one set of main exciter brushes, one set of thrust bearing shoes and runner, one guide bearing shall or shoe of each type.

All design shall be in accordance with AIEE and ASA Standards. All units shall be capable of starting and operating, for the purpose of testing *Project transmission lines*, without being connected to or dependent upon the transmission system.

(b) *Specific Requirements for Donnells Generator.*—The rating of the Donnells generator shall be not less than 67,500 kva, 0.80 power factor lagging, 13,800 volts, short circuit ratio 1.0, 60 cycles, 3-phase, 300 RPM (subject to agreement by the turbine manufacturer for the most efficient speed). It shall be designed to withstand the forces due to 200% of normal speed without distortion. (Percent overspeed subject to turbine manufacturer's determination.)

(c) *Specific Requirements for Beardsley Generator.*—The rating of the Beardsley generator shall be not less than 11,100 kva, 0.90 power factor lagging, 6,900 volts, short circuit ratio 1.0, 60 cycles, 3-phase, 300 RPM (subject to agreement by the turbine manufacturer for the most efficient speed). It shall be

designed to withstand forces due to 215% of normal speed without distortion. (Percent overspeed subject to turbine manufacturer's determination.)

(d) *Specific Requirements for Tulloch Generators.*—There shall be two generators installed, each rated at not less than 9,500 kva, 0.90 power factor lagging, 6,900 volts, short circuit ratio 1.0, 60 cycles, 3-phase, 240 RPM (subject to agreement by the turbine manufacturer for the most efficient speed). It shall be designed to withstand forces due to 215% of normal speed without distortion. (Percent overspeed subject to turbine manufacturer's determination.)

B–9. Transformers

(a) *General for all Transformers.*—Each plant shall have a transformer or transformer bank, oil insulated, 100% self cooled, 60 cycle transformers.

Transformers shall be oil immersed and shall have an inert gas seal above the oil. They shall be equipped with wheels and trucks, with oil level indicators having 125 Volt Direct Current alarm contacts, with removable radiators having shut-off valves, with ratio adjusters on side of tank and with filter press connections.

All bushings for voltages above 23 kv shall be oil-filled and for voltages above 69 kv shall have oil level indicators.

All transformers shall comply with the latest NEMA and ASA Standards.

(b) *Specific Requirements for Donnells Transformers.*—Donnells Plant shall have four single phase transformers (three for service and one spare) each rated at 22,500 kva and each equipped with winding temperature indicators having 125 Volt Direct Current alarm contacts. Each transformer shall have windings and taps as follows:

Low voltage: 13,800 V delta.

High voltage: 73,974/128,125Y, 22,500 kva; 72,170/125,000Y, 22,500 kva; 70,366/121,875Y, 22,500 kva; 68,562/118,750Y, 22,500 kva; 66,758/115,625Y, 22,500 kva.

4: 2½% taps: Impedance 8%.

(c) *Specific Requirements for Beardsley Transformers.*—Beardsley Plant shall have a three phase transformer rated at 11,100 kva equipped with winding temperature indicators in each phase having 125 Volt Direct Current alarm contacts, and shall have windings and taps as follows:

Low voltage: 6,900 V delta.

High voltage: 73,974/128,125Y, 11,100 kva; 72,170/125,000Y, 11,100 kva; 70,366/121,875Y, 11,100 kva; 68,562/118,750Y, 11,100 kva; 66,758/115,625Y, 11,100 kva.

4: 2½% taps: Impedance 8%.

(d) *Specific Requirements for Tulloch Transformers.*—Tulloch Plant shall have a three phase transformer rated at 19,000 kva equipped with winding temperature indicators in each phase having 125 Volt Direct Current alarm contacts and shall have windings and taps as follows:

Low Voltage: 6,900 V delta.

High Voltage: 72,170/125,000Y, 19,000 kva; 70,366/121,675Y, 19,000 kva; 68,562/118,750Y, 19,000 kva; 66,758/115,625Y, 19,000 kva; 64,953/112,500Y, 19,000 kva.

4 2½% taps: Impedance 8%.

B–10. Other Equipment

Oil circuit breakers shall be of the proper voltage class for their respective operating circuits; the interrupting capacity, considering a source of infinite supply volta, shall exceed the maximum short circuit power available to be interrupted.

Station power facilities shall be provided so that the source of supply can be alternatively from the generator or transmission.

Lightning arresters shall be installed at the high voltage side of the transformer as close to the transformer terminals as practicable.

All equipment shall be protected from damage by conventional methods, using either relays or other standard detecting devices.

Sump pumps and drains shall be installed in all plants to keep equipment and buildings dry.

Adequate facilities shall be installed for modern relaying of transmission lines in order to isolate the plants from the lines in event of transmission line troubles.

B–11. Communication Facilities

Power line carrier telephone equipment shall be provided at each plant to permit communication over the 110 kv transmission lines to Pacific's substation. Two-frequency, duplex, power line carrier equipment shall be used with audio coupling between back to back carrier terminals at Beardsley Plant to complete the channel to Donnells Plant and with interphase coupling in the transmission line between station buses and the points of contact of the coupling capacitors to the transmission line.

Communication between Donnells Plant and Donnells Dam shall be provided.

Alternate emergency communication to Beardsley and Donnells Plants shall be established by providing communication between Beardsley Plant and Pacific's Spring Gap Plant.

Pacific shall provide power line carrier terminals at its substation to complete the carrier channels and shall provide facilities as necessary within its Spring Gap Plant for communication to the Beardsley Plant.

B–12. Gauges and Meters

In order to permit satisfactory operation of the project and to provide a record of operations, the following gauges and meters shall be installed and read at specified intervals and the readings reported to the Pacific dispatcher upon his request.

(a) *Water Level and Flow Measurement Gauges.*—Water level gauges shall be installed to provide either daily or continuous record of water surface elevations at Donnells Reservoir, Beardsley Reservoir, and Tulloch Reservoir and a continuous record of water surface elevation at Tulloch Afterbay Reservoir.

Stream flow measuring stations to provide a continuous record of flow shall be installed at the following points on the Middle Fork of the Stanislaus River; approximately one-half mile downstream from Donnells Dam; a short distance upstream from the point of entry of discharge from the Donnells Plant; and just below Beardsley Afterbay Dam.

A record shall also be provided to Pacific of the amount of spill over Tulloch Afterbay Dam and of the amount of diversion into canals leading from Tulloch Afterbay Reservoir.

(b) *Power Plant Meters.*—In addition to the normal installation of transmission and generator meters, the following installations shall be made at each plant:

(1) Power factor or megavar meter on generator, and an additional megavar meter on the 110 kv line at Tulloch.

(2) Recording wattmeter and recording voltmeter at point of metering.

(3) At the point of metering, watthour meter for registration of plant delivery to transmission and also for registration of any delivery from transmission to the generator bus.

B–13. Efficiency and performance Tests

Efficiency and performance tests shall be made by Districts in the presence of Pacific's representatives within six (6) months of delivery of first power at each of the three power plants constructed pursuant to this contract. Tests shall be performed to obtain information necessary for proper operation of the project. Measurement of water shall be by eithe the "Gibson" or the "Allen Salt-Velocity" method. All records obtained in the tests shall be made available to Pacific.

Appendix C—Operation Requirements

The following provisions shall govern the operation of the Tri-Dam Project and, to the extent specified, of the Melones Reservoir and Plant. Nothing in this contract shall impair Pacific's right to operate and maintain at its discretion its own reservoirs and power plants. Operation requirements contained herein may be changed by mutual consent of the parties.

C–1. *General.*—Districts shall comply with schedules prescribed by Pacific for the impounding and release of water from reservoirs and afterbays and the generation of power and energy, subject only to the limits hereinafter specified.

Districts shall appoint and have in charge of operations at all times a head of operations with full authority to act for Districts in all matters relative to operation of the Tri-Dam Project. Districts shall notify Pacific of the head of operations and of any change in such appointment.

For maximum effectiveness in operation, Pacific and Districts shall cooperate in the exchange of information concerning operations and maintenance under this

contract and shall periodically exchange water release and plant operation schedules.

Districts shall, to the extent consistent with irrigation needs, cooperate with Pacific to avoid release of water from Melones or Tulloch Reservoirs on weekends and holidays.

C–2. *Operation of Donnells and Beardsley Reservoirs and Plants.*—Donnells and Beardsley Reserveroirs and Donnells and Beardsley Plants shall be operated primarily for the generation of electric power. However, for the purpose of making available to Districts as much stored water as possible consistent with power operation, Pacific shall, insofar as is reasonably practicable, schedule the release of natural flow and/or stored water at Beardsley Dam at rates which may vary considerably from day-to-day but otherwise in a manner such that the total quantity of water arriving during the seasonal year at Sand Bar including natural inflow from drainage area between Beardsley Dam and Sand Bar and water discharged into Middle Fork of Stanislaus River at Pacific's Spring Gap Plant, is not less than the amount that would have arrived if Donnells' and Beardsley Reservoirs and Donnells and Beardsley plants had been operated in strict conformity with the following schedule (starting with the actual storage in Beardsley and Donnells Reservoirs as of each November 1) so as to produce each day flows at Sand Bar equal to:

(a) 861 acre feet at times when, due to such releases, the total storage at Donnells and Beardsley at the end of any month would exceed the critical amounts as set forth in Appendix D;

(b) Up to 861 acre feet but not less than 449 acre feet during the months of January through May when, due to such releases, the total storage at the end of the month in Donnells and Beardsley Reservoirs would equal said critical amount;

(c) Up to 861 acre feet but not less than 586 acre feet during the months of August through December, inclusive, when due to such releases, the total storage at the end of the month in Donnells and Beardsley Reservoirs would equal said critical amounts;

(d) 861 acre feet during the months of June and July; and

(e) 449 acre feet during the months of January through May, inclusive and 586 acre feet during the months of August through December, inclusive, when, due to such releases, the total storage in Donnells and Beardsley Reservoirs would be less than said critical amounts;

provided that,

(1) the seasonal year shall extend from November 1 through October 31 of the year following; and

(2) if the quality of water available from the South Fork of the Stanislaus via Philadelphia Ditch is reduced by reason of acquisition by another agency, the total quantity of water under (a) through (e) above shall be correspondingly reduced; and

(3) the portion of any season when the actual water surface in Beardsley Reservoir is at or above the elevation of the fixed crest of the spillway at Beardsley Dam and the daily flow at Sand Bar equals or exceeds 861 acre feet shall be excluded (i) in computing the quantities of (a) through (e) above and (ii) in determining the total quantity of water actually arriving at Sand Bar, except that Pacific shall be credited with water arriving at Sand Bar in excess of 861 acre feet per day during said excluded period if and to the extent that the water which actually arrived at Sand Bar during the time between the preceding October 31 and the beginning of said excluded period falls short of the amount computed under (a) through (e) above for the corresponding time; and

(4) the quantities of (a) through (e) above shall be reduced when the application of these conditions would reduce below 29,070 acre-feet at the end of October 31 the combined storage above elevation 4720 in Donnells Reservoir and above elevation 3261 in Beardsley Reservoir, provided that said 29,070 acre feet shall be diminished by the usable storage subject to Pacific's control in its Relief Reservoir at the end of October 31; and

(5) in the event *storage* in both Melones and Tulloch Reservoirs is reduced to less than 10,000 acre feet above the *storage* provided at the minimum elevations prescribed in the *Melones Contract* and herein, respectively, and the inability of Districts to satisfy their irrigation requirements by draft on either Melones (within the limits of the *Melones Contract*) or Tulloch Reservoirs is imminent, Pacific shall, at the request of the Districts, make an accounting of the quantity of water which on that date had not been

released according to the schedule (a) through (e) above and shall then schedule release of that water at Beardsley Dam at rates which provide for Districts' requirements by the time the reservoirs are reduced to said minimum elevations, whether or not such water can be used for generation of power; and

(6) in the event Districts are able to satisfy all their irrigation requirements for that season by draft on either Melones (within the limits of the *Melones Contract*) or Tulloch Reservoirs, Pacific may schedule operation of Donnells and Beardsley Reservoirs to release a total amount of water less than required by (a) through (e) above.

C–3. *Minimum Operating Levels and Leakage.*—Drawdown of Donnells Reservoir below elevation 4720 or Beardsley Reservoir below elevation 3261 shall be only for the purpose of maintaining the dams in good condition. However, Pacific shall have the right to have minimum operating levels maintained until such time as drawdown is scheduled by Pacific to cause least damage to power values or until the State Engineer orders repairs to be made.

C–4. *Special Release of Water from Beardsley Reservoir.*—At request of Districts, Pacific shall schedule the release of stored water from Beardsley Reservoir in excess of Pacific's obligation under paragraph C–2; provided that such releases shall not reduce the total storage on hand in Donnells and Beardsley Reservoirs to amounts less than specified in Appendix D for the current month and that Districts shall pay Pacific $3.00 per acre foot for all such water released at their request, and not used through Stanislaus Plant.

C–5. *Operation of Melones Plant.*—Notwithstanding anything in the *Melones Contract*, Pacific shall at any time and without restriction have the right to direct the release by Districts of water from Melones Reservoir and to operate the Melones Plant, provided that

(a) Such releases and operation together with available storage in Tulloch Reservoir shall be adequate to permit Districts to divert at Goodwin Dam natural flow and stored water at rates of flow as desired by Districts up to a maximum of 1830 c. f. s. under their rights, both existing and to be acquired under existing applications made in connection with the Tri-Dam Project.

(b) Such releases and operation shall not cause spill over Tulloch Dam of water required to attain, at the time during declining spring and summer runoff when the daily inflow into Melones Reservoir becomes less than the daily irrigation requirements of Districts, a water surface elevation of 735 in Melones Reservoir or as near thereto as can be attained under that seasonal year's actual inflow conditions.

(c) After such maximum storage is attained and the daily inflow to Melones Reservoir is less than the daily irrigation requirements of Districts, releases from Melones Reservoir shall not cause spill over Tulloch Dam prior to October 31, except for water which will not be required by Districts prior to October 31.

Notwithstanding subparagraphs (b) and (c) above, spill over Tulloch Dam shall be permitted to the extent that it is caused by retention of water in Tulloch Reservoir at the request of Districts pursuant to subparagraph C–6 (e).

C–6. Operation of Tulloch Reservoir, Plant, and Afterbay.—Operation of Tulloch Reservoir, Tulloch Plant, and Tulloch Afterbay shall be for the primary purpose of regulating and releasing water for irrigation purposes. However, the following conditions shall govern the operation of said facilities in order to satisfy irrigation demands and insure power production necessary to the consideration given under the terms of this contract.

(a) Between March 1 and the end of October, Districts shall schedule water releases and this water shall pass through the Tulloch Plant and be reregulated in Tulloch Afterbay up to the ability of the plant to use water and through other facilities when irrigation requirements are in excess of the ability of the plant to use water. During the aforesaid period, except in an emergency, Districts shall schedule release of not less than 330 acre feet of water per day.

(b) Unless spilling, the maximum rate of discharge of water from the Tulloch Reservoir shall be 1,830 cubic feet per second.

(c) In no case shall the storage be drawn below elevation 431 corresponding to approximately 12,000 acre-feet storage in Tulloch Reservoir.

(d) Between November 1 and end of February, Pacific shall schedule use of not less than 36,000 acre-feet of water through Tulloch Power Plant, Pacific shall have the right to release this water at any rate up to the ability

of the plant to use water provided that Pacific shall cooperate with Districts so that Districts may reregulate said 36,000 acre-feet into their canals at flows not exceeding 500 c. f. s. by utilizing the Tulloch Afterbay capacity of 500 acre-feet. Use of water in excess of 36,000 acre-feet shall not occur unless by request of Districts or as provided in (e) of this paragraph, Pacific will cooperate with Districts in scheduling power operations in this period to permit maintenance work on Districts' canals and reservoir below Tulloch Dam.

(e) If at the end of October of any year, "excess water" (storage above elevation 640) remains in Melones Reservoir and/or "excess water" (storage above elevation 431) remains in Tulloch Reservoir, and/or "excess water" is held in Donnells or Beardsley Reservoirs pursuant to paragraph C–2 provisions (6) and the Districts have between March 1 and end of October released less than 569,000 acre-feet from Tulloch Reservoir, Pacific shall between October 31 and the end of the following February be entitled, even though spill may occur over Goodwin Dam, to schedule the use through Tulloch Plant of the difference between 569,000 acre-feet and the amount actually released (in addition to the 36,000 acre-feet fixed by (d) of this paragraph) but in no event exceeding the amount of the "excess water" at the end of October. For the purpose of determining the amount of water which Districts actually released in the period between March 1 and end of October, the amount released during period of spill over Tulloch Dam shall be deemed to be the amounts tabulated below:

	Ac. ft./day		*Ac. ft./day*
March	416	July	3,148
April	1,960	August	2,574
May	3,039	September	1,851
June	3,623	October	881

Irrespective of the foregoing terms of this paragraph, Districts shall upon notice to Pacific have the right to hold in Tulloch Reservoir all or part of the aforesaid difference (limited by the amount of "excess water") not already released from Tulloch Reservoir Districts shall notify Pacific when and if they no longer wish to restrict the use of such water, and Pacific shall schedule its use through Tulloch Plant Districts shall pay Pacific $0.70 per acre-foot for any such water which is not used through Tulloch Plant as a result of Districts' retention of such water.

C–7. *Release of Water for Fish Life.*—Districts shall not bypass water at Donnells or release water past Beardsley Afterbay Dam so as to create flows for the support of fish life in excess of the following amounts:

(a) During the months of May through October, sufficient water, including any leakage or other water, to produce a stream flow of 10 cubic feet per second at a point approximately one-half mile downstream from Donnells Dam and 32 cubic feet per second at a point immediately upstream from the point where tailwater of Donnells Plant enters the Middle Fork of Stanislaus River, provided that on dry years and during the months of November through April these amounts shall be reduced in half to 5 cubic feet per second and 16 cubic feet per second, respectively.

(b) During the months of May through October, sufficient water, including any leakage or other water, to provide a stream flow of 50 cubic feet per second at a point approximately one-half mile downstream from Beardsley Afterbay Dam, provided that on dry years and during the months of November through April this amount shall be reduced to 25 cubic feet per second.

(c) For the purpose of this paragraph, a dry year as referred to in (a) and (b) herein shall be one in which the estimated natural seasonal runoff at Goodwin Dam as predicted by the California State Division of Water Resources will be 500,000 acre-feet or less.

C–8. *Metering Devices.*—Districts, at their expense, shall maintain and read all necessary water and powerplant metering devices, including those set forth in Appendix B hereof, and shall submit information obtained therefrom to Pacific at such times as it may designate.

C–9. *Operation of Donnells, Beardsley, and Tulloch Reservoirs Prior to Operable Dates.*—Districts shall have the sole right to regulate releases from Donnells Reservoir, Beardsley Reservoir, and Tulloch Reservoir until said reservoirs are constructed and *operable*, provided that such regulation shall not interfere with Pacific's water rights for diversion for its Stanislaus Plant.

APPENDIX D

Table of storage requirements

(1)	Donnells Reservoir		Beardsley Reservoir		"Critical amounts," total storage in Beardsley plus Donnells
	Water surface elevation (2)	Gross contents of reservoir (3)	Water surface elevation (4)	Gross contents of reservoir (5)	(6)
End of—	*Feet*	*Acre-feet*	*Feet*	*Acre-feet*	*Acre-feet*
January	4,840	35,600	3,308	42,300	77,900
February	4,832	32,700	3,306	41,000	73,700
March	4,822	29,200	3,302	39,200	68,400
April	4,842	36,300	3,312	44,200	80,500
May	4,883	51,300	3,333	55,600	106,900
June	4,916	64,500	3,318	47,100	111,600
July	4,916	64,500	3,314	45,200	109,700
August	4,905	60,100	3,315	45,900	106,000
September	4,896	56,300	3,319	47,800	104,100
October	4,887	52,800	3,318	47,600	100,400
November	4,873	47,600	3,316	46,200	93,800
December	4,856	41,300	3,312	44,300	85,600

For the purposes of this contract, the tabulated amount of water shall be deemed to be stored when the water surface stands at the corresponding elevation given in the table.

APPENDIX E—LABOR INDEX

The *labor index* to be used to adjust the payments to be made under paragraph 11 and as provided in paragraph F–13 shall be determined in accordance with this Appendix.

E–1. Said index shall be the ratio between (1) the sum of Pacific's weekly salary and wage rates corresponding to those given in the following table and in effect on the date for which the index is determined, and (2) the sum of $802.59, being the sum of the rates in effect March 15, 1952, as given in the table. The index shall be determined for each March 15 and September 15 during the term of this contract and the index determined for the latest such date prior to the due date of each payment shall be the *labor index* used to adjust that payment.

E–2. The following tabulation lists for 10 employees, the classification of each employee, the class of work performed, and the gross weekly wage or salary rates as taken from Pacific's schedules which became effective on April 1, 1951 and which were in effect as of March 15, 1952. The weekly rate shown for Foreman was determined from

"SCHEDULE II.—*Pacific Gas & Electric Co. standard salary ranges on 40-hour-workweek basis—supervisory, technical, and other classifications—monthly and weekly divisions,*" *and the remaining 9 rates are from "Pacific Gas & Electric Co. basic wage schedule—5-day-week basis—operation, maintenance, and construction employees applicable to all divisions and building department of the general office*"

Classification of employee	Class of work for classification having more than 1 wage or salary rate	Weekly wage or salary rate in effect as of Mar. 15, 1952
Foreman	Maintenance; hydroplant; end of 2 years as foreman	$103.93
Laborer		61.50
Carpenter	Finish	80.12
Machinist	Electrical	84.75
Electrician		84.75
Operator	1st; 3-shift hydroplant; schedule II	80.12
Operator		80.12
Operator		80.12
Operator		80.12
Tender	Lake; maximum rate	67.06
Total		802.59

E-3. The index for any date shall be the sum of the salary and wage rates in effect on that date corresponding to the rates in the above table, divided by $802.59. If any schedule or classification given in the table is discontinued or modified the rate for the most nearly corresponding classification of employee and class of work shall be used.

E-4. When schedules show wage or salaries for periods other than one week, they shall be reduced to weekly rates in the following manner:

Yearly rates shall be divided by 52.00.
Monthly rates shall be divided by 4.333.
Bi-Monthly rates shall be divided by 2.167.
Daily rates shall be multiplied by 5.00.

APPENDIX F—MAINTENANCE REQUIREMENTS

The following provisions shall govern the maintenance of the Tri-Dam Project.

F-1. *General.*—Districts shall maintain all of Districts' elements of the Tri-Dam Project in first-class operating condition so that they will continue to perform satisfactorily the functions which they are designed to serve.

F-2. *Maintenance of Donnells* Tunnel.—Districts shall maintain the tunnel between Donnells Dam and Donnels Plant in such condition that water losses therefrom shall not exceed 12 cubic feet per second. The rate of tunnel leakage shall be computed from measurements taken of drop in water surface elevation within the surge chamber while tunnel valves remained closed near the dam and at the head of the penstock.

F-3. *Inspections.*—Districts shall make such inspections, investigations, and tests, both routine and extraordinary as are called for by the best engineering and operating practice and shall afford Pacific full opportunity to inform itself as to the condition of the project and the elements thereof by giving Pacific notice and opportunity to join with Districts in inspections, investigations, and tests, by submission to Pacific of copies of reports as to the results thereof, and by giving Pacific access to their properties for the purpose of any inspections, investigations and tests which Pacific may desire to perform independently of Districts. Pacific shall be given full opportunity to inspect the performance of any maintenance work on the Tri-Dam Project by Districts, their employees, agents, and contractors.

F-4. *Scheduling.*—Districts shall notify Pacific of contemplated maintenance work which would affect power output and shall cooperate with Pacific in scheduling the work by advancing or postponing the time of performance so as not unnecessarily to cause power loss or inconvenience to Pacific. Such maintenance work shall be completed in the shortest possible time and if requested by Pacific shall be performed on a 24-hour workday basis, including Sundays and holidays.

F-5. *Performance by Pacific.*—If, in Pacific's opinion, maintenance work is necessary to avoid or minimize the possibility of loss of capacity or energy to Pacific and if Districts fail to initiate the necessary maintenance work within 2 weeks after written request therefor by Pacific and thereafter diligently carry it through to completion, Pacific may perform the work, letting such contracts therefor as it may deem desirable. Pacific may enter upon Districts' premises and control operation of the Tri-Dam Project to the extent reasonably required for performance of the work. Pacific's determination as to the necessity for, manner of performance of, and amount of expenses for maintenance work hereunder shall be conclusive in the absence of bad faith. Districts shall reimburse Pacific for its actual expenses incurred in performing or causing to be performed such maintenance work plus overhead charges to be computed as 20% of actual expenses. Such reimbursement may be made through the maintenance fund hereinafter provided but shall not be limited by the amount therein.

F-6. *Maintenance Fund.*—To provide further assurance of proper maintenance of the Tri-Dam Project, Districts shall establish and maintain a maintenance fund under a trust agreement with a trustee chosen by mutual agreement of the parties hereto.

F-7. *Trustee.*—The trustee shall be a bank or trust company authorized to do and doing business in the State of California and having capital, and surplus, and undivided profits of at least $5,000,000.

F-8. *Deposits.*—Districts shall, before the date of the first payment for firm capacity, if any, pursuant to subparagraph 9 (a), or on or before the *full operation date*, whichever is the first to occur, deposit in such fund the sum

of $200,000. Pacific shall deposit in said fund thirty percent of each payment due and payable to Districts under paragraph 11 and such deposits by Pacific shall discharge its obligations to Districts under said paragraph to the extent of the deposit.

F–9. *Withdrawals.*—Withdrawal may be made from said fund only as provided in the following paragraphs.

F–10. *Reimbursement to Districts.*—Districts shall be entitled to withdraw money from the maintenance fund to reimburse themselves for their actual expenditures for maintenance purposes for the Tri-Dam Project. For each such withdrawal Districts shall, by a written certificate signed by their respective presidents, certify to the trustee of said fund the amounts actually expended by them or either of them, including payments to contractors or Pacific, for maintenance of the Tri-Dam Project or any part thereof and the trustee shall thereupon be empowered to pay said amounts to Districts.

F–11. *Payment of Districts Obligations.*—At the request of Districts, supported in each case by a certificate as to the facts signed by their respective presidents, said trustee shall be empowered to pay for the account of Districts any obligations incurred by them or either of them, including obligations to contractors or Pacific, to pay for work performed or materials furnished for maintenance of the Tri-Dam Project or any part thereof.

F–12. *Reimbursement to Pacific.*—In the event that Pacific performs maintenance work on the Tri-Dam Project or any part thereof pursuant to paragraph F–5 Pacific shall be entitled to withdraw from the maintenance fund any amount necessary for reimbursement to which it is entitled under said paragraph F–5. For each such withdrawal Pacific shall, by a written certificate signed by its president or one of its vice presidents, certify to the trustee of said fund the amounts for which it is entitled to reimbursement and Districts shall, by written certificate signed by their respective presidents, certify to the trustee that Pacific is entitled to such reimbursement. Upon receipt of such certificates said trustee shall thereupon be empowered to pay to Pacific the amount of such reimbursement.

F–13. *Excess amounts.*—In the event that on any June 1 or December 1 the total amount held by said trustee in the maintenance fund shall exceed the sum of (1) one million dollars multiplied by the latest *labor index* plus (2) the amount of Districts' then outstanding and unpaid obligations incurred for maintenance work performed on the Tri-Dam Project or any portion thereof, including such work performed by Pacific under paragraph F–5 hereof, then Districts may, upon certifying such facts to said trustee, withdraw such excess.

F–14. *Termination.*—Upon the termination of this contract all amounts remaining in said fund shall be paid to Districts, except that any amount to which Pacific may be entitled by virtue of paragraph F–12 above shall be withheld upon Pacific's certificate alone and retained until the respective rights of Districts and Pacific thereto shall be finally ascertained.

F–15. *Reliance by Trustee.*—Said trustee, in all matters relating to the operation of and withdrawals from said fund shall be entitled to rely upon the certificates of Districts and Pacific and shall not be obligated to make an independent determination of the facts certified.

F–16. *Investment.*—Any portion of said fund may be invested in United States government securities, at the direction of Districts, or in such other securities as may be agreed upon by Districts and Pacific. All interest and other income received from such investment shall be deposited in and become a part of said fund.

F–17. *Expenses of Trustee.*—The expenses and fees of the trustee shall be paid out of said fund.

F–18. *Scope of Maintenance.*—As used herein maintenance shall include the performance of all work and the furnishing of all materials necessary to keep the Tri-Dam Project in first class operating condition and shall include any replacements prudently required for such purpose.

EXHIBIT F

Oakdale Irrigation District—Tabulation showing status of landholdings and summary of irrigation development

Size of holdings, acres	Number of holdings	Total holdings, acres	Percent o total
0 to 160	2,482	38,575	56.3
161 to 200	9	1,519	2.2
201 to 250	10	2,214	3.3
251 to 320	[1] 14 (14)	3,955	5.8
321 to 400	[1] 11 (11)	3,783	5.5
401 to 600	[1] 14 (14)	6,587	9.6
601 to 800	[1] 10 (10)	6,445	9.4
801 to 1,000	[1] 3 (2)	2,719	4.0
1,001 to 1,200	1	1,168	1.7
1,201 to 1,500	[1] 1 (1)	1,506	2.2
Total	2,555	68,471	100.0

[1] Figure in parentheses indicates number of such holdings that are in multiple ownership.

NOTE.—Average size holding in excess of 1 acre equals 38.8 acres.

Summary of irrigation development

	Acres
Lands under irrigation	57,678
Dry-farmed and undeveloped	[1] 10,793
Roads and rights-of-ways	2,876
Area in cities and towns	998
Gross area of district	72,345

[1] This acreage is largely composed of land above gravity irrigation, and is in numerous small parcels in many ownerships throughout the district.

EXHIBIT G

South San Joaquin Irrigation District—Tabulation showing status of landholdings and summary of irrigation development

[Data collected from district records for 1953]

Size of holdings, acres	Number of holdings	Total holdings, acres	Percent of total
1 to 9	1,220	3,352	5.2
10 to 40	1,109	25,350	39.0
41 to 80	275	15,789	24.2
81 to 120	76	7,423	11.4
121 to 160	28	3,826	5.9
161 to 240	[1] 25 (20)	4,347	6.7
241 to 320	[1] 3 (2)	880	1.4
321 to 400	[1] 2 (0)	747	1.1
401 to 800	[1] 4 (3)	1,808	2.8
801 to 1,600	[1] 1 (1)	1,518	2.3
Total	[2] 2,742	65,040	100.0

[1] Holdings owned by more than 1 person.
[2] Does not include holdings less than 1 acre in size.

Summary of irrigation development

	Acres
Lands under irrigation	63,589
Unirrigated cropped	524
Cities	1,360
Land in grounds, buildings, and ditches	2,473
Land in roads and miscellaneous noncrop	3,166
Gross area of district	71,112

NOTE.—Average size of agricultural holding in excess of 1 acre equals 23.72 acres.

EXHIBIT H

OAKDALE IRRIGATION DISTRICT—SOUTH SAN JOAQUIN IRRIGATION DISTRICT, TRI-DAM PROJECT, CALIFORNIA

List of construction contractors and equipment manufacturers who submitted bids in 1953 for Tri-Dam Project work

Specifications No. BD–121—Construction of dams, tunnels, and power houses

Bids opened April 16, 1953, from

General Construction Co., The Shea Co., Pacific Bridge Co., Henry J. Kaiser Co., Alhambra, Calif., Macco Corp., Morrison-Knudsen Co., Inc., River Construction Co., Boise, Idaho, Winston Bros. Co., Al Johnson Co., Monrovia, Calif., Arundel Corp., L. E. Dixon Co., Guy F. Atkinson Co., W. E. Kier Construction Co., South San Francisco, Calif., John C. Gist Co., Sacramento, Calif, Foley Bros, Inc., Donovan Const. Co., C. F. Lytle Co., St. Paul, Minn., Utah Construction Co., San Francisco, Calif., C. F. Lytle Co., Donovan Construction Co., Foley Bros., Inc., Sioux City, Iowa, Tri-Dam Associates (J. A. Jones Construction Co., Chas. H. Tompkins Co., S. A. Healy Co., and A. Teichert & Son, Inc.), Seattle, Wash., T. E. Connolly, Inc., Wunderlich Construction Co., San Francisco, Calif., Morrison-Knudsen Co., Inc., Peter Kiewit Sons' Co., Maco Corp., Los Angeles, Calif., Graffee-Callahan Construction Co., Lloyd Shofner, David G. Gordon, Los Angeles, Calif.

Specifications No. BD–101—Manufacture of turbines and control valves

Bids opened March 12, 1953, from—

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
Pelton Water Wheel Co., San Francisco, Calif.
S. Morgan Smith Co., York, Pa.
The James Leffel & Co., Springfield, Ohio
Baldwin-Lima-Hamilton Corp., Philadelphia, Pa.

Specifications No. BD–102—Alternating-current generators

Bids opened May 15, 1953, from—

Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
The Elliott Co., Jeannette, Pa.
The General Electric Co., Schenectady, N. Y.
Westinghouse Electric Corp., San Francisco, Calif.

Specifications No. BD–103—Main power transformers

Bids opened March 23, 1953, from—

Pennsylvania Transformer Co., Canonsburg, Pa.
Moloney Electric Co., San Francisco, Calif.
Westinghouse Electric Corp., San Francisco, Calif.
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.
General Electric Co., San Francisco, Calif.
Wagner Electric Co., San Francisco, Calif.

Specifications No. BD–107—Draft tube bulkheads

Bids opened April 22, 1953, from—

Pacific Coast Engineering Co., San Francisco, Calif.
Consolidated Western Steel Division (United States Steel Corp.), San Francisco, Calif.

Specifications No. BD–109—Tunnel lining and penstock

Bids opened April 22, 1953, from—

Southwest Welding & Manufacturing Co., Alhambra, Calif.
Consolidated Western Steel Division, San Francisco, Calif.
Pacific Coast Engineering Co., San Francisco, Calif.
Chicago Bridge & Iron Co., San Francisco, Calif.
Basalt Rock Co., Inc., Napa, Calif.

Specifications No. BD–110—Tainter gates and gate hoists

Bids opened April 29, 1953, from—

Pacific Coast Engineering Co., Alameda, Calif.
Willamette Iron & Steel Co., Portland, Oreg.
Moore Dry Dock Co., Oakland, Calif.
Weld-Rite Co., Oakland, Calif.

Consolidated Western Steel Division, San Francisco, Calif.
The Southwest Welding & Manufacturing Co., Richmond, Calif.
Berkeley Steel Construction Co., Berkeley, Calif.
Independent Iron Works, Inc., Oakland, Calif.
Judson Pacific-Murphy Corp., Emeryville, Calif.
S. Morgan Smith Co., York, Pa.
Moffett Engineering Co., Albany, Calif.
Columbia Machine Works, Berkeley, Calif.
Berger Engineering Co., Seattle, Wash.

Senator KUCHEL. Is that all you have?

Mr. MINASIAN. At this time I might also introduce a photostatic copy of a letter from Pacific Gas & Electric Co., which shows the willingness of that company to extend their present contract for a number of years additional, if required.

Senator KUCHEL. It will likewise be received and made a part of the record.

(The material referred to follows:)

PACIFIC GAS & ELECTRIC CO.,
San Francisco, Calif., April 21, 1954.

OAKDALE IRRIGATION DISTRICT,
Oakdale, Calif.
SOUTH SAN JOAQUIN IRRIGATION DISTRICT,
Manteca, Calif.

DEAR SIRS: Enclosed herewith is a formal proposal for an extension of 2 years in the time allowed the districts to complete financial arrangements under the Tri-Dam project contract dated July 9, 1952. It is intended that this extension become effective upon acceptance by both districts.

We have given consideration to your request that the company obligate itself under the contract for an additional period after the year 2000, the presently agreed upon expiration date. As you are aware, any further commitment by the company must depend in part upon holding a Federal Power Commission license or similar rights which will permit it to take the power and make use of the falling water to be purchased from the districts. We are now engaged in working out a comprehensive plan which we believe would give the districts greater assurance of revenues over a longer period of time than has heretofore been considered.

In brief, this plan is to surrender our existing license for a transmission line to take power from the Donnells and Beardsley powerplants and amend our pending application for a new license for the Melones and Stanislaus powerplants to include the transmission line. This should be quite proper since the transmission line will also tie into the Spring Gap powerhouse which is under the same license as the Stanislaus plant. In order to provide a maximum period under which payments can be made to the districts we would request that the new license have a term beginning 50 years from the date of issuance, thus adding some 5 years to the presently proposed license period. We would also ask that the Tri-Dam project contract be extended to the termination of the new license and be approved by the Federal Power Commission in such manner that the company's obligation of payments under it would become binding upon any successor to the company's project.

We believe that this plan should have merit in the eyes of the Federal Power Commission staff as bringing together under one license all of the company's facilities on the Middle Fork Stanislaus River and as being best adapted to promote the comprehensive development of the stream. We will use our best efforts to work out this plan in detail and urge its adoption by the Commission.

Very truly yours,

N. R. SUTHERLAND.

OAKDALE IRRIGATION DISTRICT,
Oakdale, Calif.
SOUTH SAN JOAQUIN IRRIGATION DISTRICT,
Manteca, Calif.

We hereby propose that the 24-month period referred to in paragraph 26 of the contract between us dated July 9, 1952, be extended to 48 months so that the contract shall not terminate by reason of nonperformance by the dis-

tricts prior to July 9, 1956. If you agree to this extension, please indicate your acceptance below.

PACIFIC GAS & ELECTRIC CO.,
By N. R. SUTHERLAND,
Vice President and General Manager.
And by S. S. MANHOOD, *Its Secretary.*

Accepted:

OAKDALE IRRIGATION DISTRICT,
By EDWIN KOSTER, *President.*
And by O. W. QUINLEY, *Secretary.*

SOUTH SAN JOAQUIN IRRIGATION DISTRICT,
By JOHN E. VRIELING, *President.*
And by E. O. BERDAHL, *Secretary.*

Mr. MINASIAN. That is all.

Senator KUCHEL. Representing the board of the South San Joaquin Irrigation District is Mr. John Vrieling.

Do you have a prepared statement?

STATEMENT OF JOHN VRIELING, PRESIDENT, BOARD OF DIRECTORS, SOUTH SAN JOAQUIN IRRIGATION DISTRICT

Mr. VRIELING. I have a prepared statement I would like to present.

Mr. Chairman, my name is John Vrieling. I am a dairyman and president of the board of directors of the South San Joaquin Irrigation District. That district and the Oakdale Irrigation District are State agencies of the State of California. Both were organized in 1909. They are located within the counties of San Joaquin and Stanislaus, 70 miles east of San Francisco in the northeasterly part of the great San Joaquin Valley. They have within their boundaries 143,457 acres and a population of over 30,000. The cities of Manteca, Ripon, Escalon, Oakdale, Riverbank, and Valley Home are within the districts' boundaries.

These districts contain a very important segment of California's agricultural economy. Approximately 121,000 acres of the districts are presently irrigated, growing diversified crops with a conservative estimated annual gross value of $20 million. The size of individual holdings is small, the average farm being 29½ acres. This excludes all holdings under 1 acre. A tabulation of the holdings will be offered for the record.

The prosperity of the people in these districts depends upon the development of an adequate water supply which the districts do not now have. To that end the districts have, over the past several years, carried on extensive preliminary investigations on the Stanislaus River in California, from which has been developed what is now known as the Tri-Dam project.

This project consists of 3 mountain reservoirs and dams, and 3 powerplants with tunnels and appurtenant works, to be constructed, owned, and operated by the 2 districts. The two upper units of the project will be located upstream from the proposed Army engineers' New Melones flood-control dam and the lower unit will be located immediately below said flood-control dam. The memorandum you have before you contains a map, exhibit B, showing the location and elevation of these various features, together with drawings of each dam and powerplant.

On this development the districts have expended over $1,250,000 on engineering, preliminary investigations, diamond drilling, access

roads, surveying, design work, etc. That work is now complete. Federal Power Commission licenses have been obtained and permits for necessary water rights have been issued by the State of California. The construction of the project is now ready to start.

It was not the intent of the districts to ask the Government for assistance. They intended to build the project, financing it with funds provided from the sale of revenue bonds. To that end the people in these two districts voted to issue $52 million principal amount of bonds. The vote was overwhelming, 36-to-1 in one district and 10-to-1 in the other.

Detailed plans and specifications have been prepared, and in the spring of 1953, 47 bids were received from construction contractors, and turbine, generator, and equipment manufacturers throughout the Nation. A brief synopsis of bids received is attached as exhibit H to the memorandum you have before you. It was our hope that the project would have been under construction at this time.

As you know, interest rates on municipal securities rose approximately 1½ percent by early 1953. The result was that the ability of the districts to issue bonds was reduced by approximately $12 million. The necessary reserves intended to meet possible contingencies were gone. The districts, therefore, had no alternative but to reject all bids and attempt to work out a logical means of overcoming this financial difficulty.

Although interest rates have improved somewhat, assistance as provided in this proposed legislation is necessary if the project is to proceed. We have a sound plan. Other witnesses will explain it to you.

Senator KUCHEL. Next the committee will hear from Mr. Edwin Koster, the president of the Oakdale Irrigation District.

STATEMENT OF EDWIN KOSTER, PRESIDENT, BOARD OF DIRECTORS, OAKDALE IRRIGATION DISTRICT

Mr. KOSTER. I, too, have a prepared statement that I wish to read for the record.

My name is Edwin Koster. I am a dairyman and president of the board of directors of the Oakdale Irrigation District and am speaking in behalf of that district and the South San Joaquin Irrigation District. The people who I represent appreciate your generosity for giving our representatives the opportunity to appear before your committee in support of the Tri-Dam bill. Our purpose in being here is to seek aid in the development of the multiple-purpose irrigation and hydroelectric Tri-Dam project in California.

Two major obstacles exist, both of which were contributing factors that prevented the start of construction on this project last spring. One is the securing of an interest rate on bonds to be sold to private investors that is low enough to permit the sale of sufficient bonds to completely finance the project from that source. The other is the question of revenue financing. Revenue bonds that are to be repaid from the potential earnings of a project not yet constructed must have behind them ample available funds, in excess of construction estimates, to assure the investor that the project can be completed and put into operation. Without ample reserves for contingencies sufficient to

guarantee completion, private revenue bonds are not salable. The need for this legislation is to cover these deficiencies.

S. 3040, which provides for an adequate reserve fund, will overcome both problems. It will assure the completion of the Tri-Dam project. We are advised by our bond counsel that a contingency as provided in this bill will assure the bond buyer that the revenue bonds, which must be sold, are a secure investment. It will attract bond buyers who are willing to invest in long-term securities at a low interest rate.

The bill you have before you provides for an interest-free Government loan to the Oakdale and the South San Joaquin Irrigation Districts of an amount not to exceed $10,370,000 to be used, if necessary, in the construction of the $48 million Tri-Dam irrigation and hydroelectric project of these districts.

The $10 million figure is the maximum amount of the loan and probably far less, if any, will be used. The maximum figure is based upon the portion of the cost of this project that is properly allocable to irrication. The precedent for such a loan is to be found in the fact that the Government, through its Bureau of Reclamation, has provided interest-free money for the irrigation features of its multiple-purpose projects. This project will provide the same public benefits that would accrue if it were constructed by the Bureau of Reclamation but at far less, if any, cost to the Government.

Engineering features of the Tri-Dam project, financing the project, and repayment of loans will be presented by other witnesses. It is my purpose to briefly outline our problem to you and give you information respecting the efforts of these districts to meet their water needs through this project.

Originally the districts obtained their water supply by direct diversion from the Stanislaus River; however, as this supply proved to be very inadequate, in the year 1926 they constructed the Melones Dam and Reservoir on that river to impound 112,500 acre-feet of winter flow. This dam was financed by the districts through sale of the use of falling water to the Pacific Gas & Electric Co. for generation of power.

The water storage supply of that reservoir is now inadequate. The districts must curtail use of water far below the amount required and in almost every year terminate irrigation prior to the end of the growing season. This water shortage is particularly disastrous in years of below-normal runoff because crops dry up early in the season. This water shortage has come about due to the rapid expansion in the development of Ladino clover pasture and as a result of the general growth of agriculture in the area. Additional plantings within the districts will further increase the need for water storage. A chart showing the need for additional water storage is offered for the record as exhibit A in the document before you.

To meet the growing demand for additional water, engineering studies and investigations were initiated as early as 1938, culminating in the present Tri-Dam project. In order to enable the districts to sell private bonds, it was necessary that they have a firm commitment for the sale of the electric power output from the three powerplants. After a thorough investigation and study in an attempt to sell the power to public and private agencies, the districts entered into a firm contract for the sale of the entire power output to the Pacific Gas

& Electric Co. at a price calculated to be sufficient to amortize the capital cost and meet the annual O. and M. costs of the dams and powerplants. At the time of contract signing (July 9, 1952), interest rates were estimated to be under 3 percent.

The cost of the project, based upon low bids received, is $47,647,000. Income from power revenue under the contract will retire $46,481,000 at 3½ percent interest over a 47-year period. This is somewhat less than the estimated cost of the project. It is conceivable, and quite probable, that, with adequate reserves for contingencies as provided for in this bill, interest rates at 3 to 3¼ percent will be available and, in that event, if there are no serious overruns in costs, a very small portion, if any, of the loan need actually be disbursed but will be held in trust merely as a contingency reserve during the construction period.

It was the intent of the districts to build this project through private financing to be paid from firm revenues derived from the sale of electric energy produced by the project. However, as already mentioned, this was prevented due to the lack of an adequate reserve fund and by the rise in interest rates that occurred in late 1952 and early 1953 at the time the districts were preparing to issue their bonds. The districts are still determined to finance the project to the greatest extent possible through the sale of private bonds, and the bill so provides. Repayment of the Government loan from an unquestionably adequate source is provided by the bill.

It is important, not only to the districts and the area where the project is to be built, but to the Nation and the State of California that this project be constructed. The following public benefits will result:

(1) It will add 230,000 acre-feet of urgently needed stored water for late season irrigation and provide holdover storage for dry years as shown on exhibit A.

(2) It will provide 81,500-kilowatt installed electrical-generating capacity which, in combination with existing powerplants using the stored water, will generate an average of 475 million kilowatt-hours of electrical energy annually.

(3) It will provide flood-control benefits on the Stanislaus River, the extent of which are now being studied by the United States Corps of Engineers.

(4) It will create three scenic mountain lakes with access roads and will provide ideal recreational facilities in an area now undeveloped.

(5) It will furnish employment for several thousands of persons, not only in California but throughout the Nation. Forty-eight million dollars will be placed in circulation, not only in the local area while constructing the project, but also throughout the United States in supplying generators, turbines, penstocks, transformers, and other equipment and materials.

Further, this project will not interfere in any way with the orderly and necessary development of the Central Valley's project in California. This may be attested to by the fact that all the Federal Power licenses on all three projects were approved by all Federal and State agencies, and this was done during the administration of President Truman.

To conclude, it is conceded that many things can be done better if they are administered from Washington; but that for projects of this nature there can be greater efficiency, more local interest, less cost to the taxpayer, better results, and more "democracy in action" when local people administer their own program—even if a portion of the money is borrowed from the Federal Government.

When local people decide what their needs are, formulate their own program to meet those needs, and feel the responsibility of financing the expense of the program, surely Government participation to the extent requested is justified. This bill, in addition to being urgently needed to bolster a feasible and desirable project, which is ready to be built, represents a logical, sound, and essential pioneering philosophy.

I have one more letter here, a statement by Delos James, representing the National Grange, which I take pleasure in presenting to you to be made part of the record. It is a letter in support of the project.

Senator KUCHEL. It will be received and made a part of the record.

(The letter referred to follows:)

STATEMENT SUBMITTED ON S. 3040, AUTHORIZING APPROPRIATION OF FUNDS TO AID IN THE CONSTRUCTION OF THE TRI-DAM PROJECT, CALIF., BY DELOS L. JAMES, DIRECTOR, AGRICULTURE-INDUSTRY RELATIONS, THE NATIONAL GRANGE, JULY 2, 1954

The National Grange is pleased to have this opportunity to give its support to the adoption of S. 3040, to authorize the appropriation of funds for the purpose of aiding the Oakdale and South San Joaquin Irrigation Districts in the construction of the Tri-Dam project.

A very commendable feature of this project is the proposal to bring together the resources of local agencies and the Federal Government in the development of a project that has for its purpose the production of power, irrigation, and to some extent flood control and in such a way that the financial assistance provided by the Federal Government will be repaid over a period of years, thus relieving the taxpayers of the Nation of any expense in connection with the use of Government funds.

Despite the fact that we now have large surpluses of food and fiber supplies it is reasonable to expect that due to a constantly increasing population the need in a few years for even larger supplies of all kinds of farm products will continue to increase, in which case more land will be needed to furnish the necessary supplies. But land alone will not be sufficient, there must be available an abundant supply of water, and where it is possible to furnish it by irrigation the added assurance of an adequate supply of moisture in the production of crops and for other purposes removes most of the hazards in the farming operation that are present when rainfall only is depended upon.

Coupled with such a system of irrigation as is planned in the Tri-Dam project, the production of electric power to be available not only for farm use but for other industry purposes gives added assurance of its success and emphasizes the importance of an early approval of the plan in order that its benefits may be made available as early as possible.

Numerous other benefits are naturally an important part of such a development and become available to the entire community simultaneously with the releasing of the first flow of water. Even before that event a large amount of labor will be used in construction, manufacture of necessary equipment, and in other respects. Flood-control benefits are an important potential of such a project as well as the creation of recreational facilities and an overall contribution in the development of a well-balanced community.

Assurance of a satisfactory disposal of the power to be generated at a price that will retire the cost of the project within a reasonable period is an important factor in favor of granting the necessary legislative authority to go ahead.

In view of the rather urgent need for more water and more electric energy, together with other extensive benefits that can be expected to result from the proposed Tri-Dam project, we in the National Grange appreciate this opportunity to add our support to the passage of S. 3040.

Senator KUCHEL. The next witness will be Mr. T. P. Stivers, who is the engineer for both of the districts, whose representatives previously testified.

STATEMENT OF T. P. STIVERS, CIVIL ENGINEER, TRI-DAM PROJECT

Mr. STIVERS. My name is T. P. Stivers. I am chief engineer of the South San Joaquin District and executive engineer for the Tri-Dam project, representing both districts. I am a registered civil engineer in California, an associate member of the American Society of Civil Engineers, and a member of the National Society of Professional Engineers.

My purpose in appearing here today is to present facts regarding the physical nature of the Tri-Dam project, the irrigation benefits which will be derived from it, the economic feasibility of the project, and explain how a Federal interest-free loan will make it possible for the irrigation districts to sell revenue bonds to finance this project.

First of all, I would like to briefly indicate the nature of the present water supply of the districts and the extent to which the Tri-Dam project will aid it. The Oakdale and South San Joaquin Irrigation Districts since their formation in 1909 have now nearly reached full development. They have constructed over 650 miles of canals and have constructed storage works. The water demands of the districts are approximately 90 percent of the estimated ultimate requirements.

I would like to point out that all the development to date has been done by local initiative and private financing. The districts depend almost entirely upon the runoff of the Stanislaus River for their water supply. The runoff of this stream is typical of the Sierra streams. It fluctuates very widely in annual runoff from a recorded low of 250,000 acre-feet to a recorded high of over 2,700,000 acre-feet.

The estimated ultimate requirements of the districts amount to 570,000 acre-feeet annually, which is more than twice the total flow of the river on the dry year of record. The major portion of the annual runoff occurs in the spring months and the flow of the river is normally so low after the end of June that for the remainder of the season the districts must rely principally upon stored water to supply the irrigation needs.

The present storage facilities are wholly inadequate to provide for a full water supply in normal years, and there is no storage space which can be used to hold water over from wet years to dry years. With present facilities the districts would have a water supply of only 43 percent of the demand under runoff conditions equal to the dry year of record.

The Tri-Dam project is designed to provide a supplemental water supply which will fill all demands in normal runoff years and will hold water in reserve from wet years to dry years. With existing storage facilities, the districts' ultimate requirements would be filled in only 1 out of 26 years. Upon completion of the Tri-Dam project the districts' ultimate requirements would be filled in 19 out of 26 years.

I would like to show graphically on a chart which is attached as exhibit A to the memorandum which has been presented for the

record, how the present water supply compares with the requirements and the effect of the Tri-Dam project on this supply. This chart indicates in the vertical scale a quantity of water in hundreds of thousands of acre-feet from zero to the top, which is the ultimate requiremenet of 570,000 acre-feet, and represents also the runoff record of the river from 1921 to 1946 as studied by the district as a basis for this project.

The area colored by blue is the present available supply under present facilities which would be available under runoff conditions of these years. You will note that with present facilities there is only 1 year in which the ultimate requirements of the districts would be fully satisfied out of the 26 years. The red area colored on the chart represents the supplemental supply which the Tri-Dam project will provide to the districts under those runoff conditions. You will note that under conditions with the Tri-Dam project completed, there are 19 out of the 26 years in which the districts would be supplied with 100 percent of their requirements.

I would like also to describe briefly the physical nature of the projects.

Senator KUCHEL. Will that chart be available as part of the printed hearing?

Mr. STIVERS. A copy of this chart in a small scale is attached to the memorandum which has been introduced.

This map is a large scale of exhibit B of the memorandum introduced into the record and is a map showing the plan and profile of the middle fork and main stream of the Stanislaus River on which this project is located.

I would like to point out that the name of the Tri-Dam project comes from the fact there are three principal units located on the middle fork of the river. The upper reservoir is known as the Donnells Reservoir, which stores 64,500 acre-feet of water from which a tunnel is proposed to be constructed and water dropped into a powerhouse of 54,000 kilowatts and under a net head of 1,151 feet to 1,325 feet. This water is then reregulated and restored in the Beardsley Reservoir, the second unit, which holds 97,500 acre-feet of water and from which water is released through a powerhouse of 10,000-kilowatt capacity.

The water is then proposed to be reregulated through the existing works of the Pacific Gas & Electric Co. known as the Stanislaus powerplant whereby the water will be used to generate power and thence released downstream into the existing dam of the two districts named the Melones dam and reservoir. The water is then proposed to be restored, reregulated through the existing Melones powerplant owned by the Pacific Gas & Electric Co. and thence into the lower unit of the proposed project, the Tulloch Reservoir. This reservoir will have a capacity of 68,400 acre-feet and will have a powerplant located at the dam of 17,000 kilowatt capacity.

The water is then released, reregulated at the existing diversion works of the district known as the Goodwin Dam and released into the canals of the district. I want to point out that there are two units of this project, from which the districts will receive revenue, that are owned by the Pacific Gas & Electric Co. for which the districts will receive payments for headwater improvement benefits; they are the Stanislaus powerhouse and the Melones powerhouse.

The amount to be received from the Stanislaus powerhouse is $604,000 per year. The Melones powerplant would produce an additional $136,000 a year. These amounts are payments to be made by the Pacific Gas & Electric Co. to the districts under their existing contract and are proposed under this bill to be set aside for a certain period of years as security for repayment of any Federal funds which are used.

The lower part of this chart is a map in plan which shows the general location of the two districts related to the Stanislaus River.

This project fits the ultimate development planned for the Stanislaus River. We have had approval from all Federal agencies which have been concerned with this development through their approval of issuance of Federal Power Commission licenses to the district, and I want to point out that the large flood-control project now planned by the Army engineers at the new Melones site is just upstream from the district's lower proposed project called the Tulloch project. We have a current agreement with the Bureau of Reclamation for use of Tulloch Reservoir as an afterbay to the new Melones project in the event it is constructed at a later date. The Tri-Dam project was started to be planned back in 1938. Since that time the districts have employed many noted engineers, constructed access roads into the sites, completed all of their plans, and are ready to proceed with construction at this time.

The districts have spent over $1,250,000 to date on this work. We have a set of plans here which we have brought along for examination, but we would request the permission of the committee to use them for the proposed House hearings. So we would prefer not to file them at this time.

Senator KUCHEL. Very well.

Mr. STIVERS. I would like to show briefly a few pictures which I believe will show you the sites of the various units of the project.

Senator KUCHEL. The chairman will suggest, since these pictures obviously cannot be made a part of the record, that the court reporter will desist while they are being run.

(At this point slides of the projects were shown.)

Mr. STIVERS. I would like to point out the cost of this project has been reviewed very carefully. The memorandum submitted for the record shows a breakdown of the cost estimate and a total of $47,647,000 under present conditions. That includes interest during construction and all overhead and engineering costs. The district considers that this is a very conservative estimate under present conditions, due to the fact that in the spring of 1953, when the districts believed they could proceed with construction, they actually took bids on all principal units of the project. That included construction bids as well as bids for equipment and machinery. Therefore, we have a very good basis for arriving at a close cost estimate at this time.

With respect to the revenues which the districts will receive to make the financing of this project possible, I wish to point out that when the project was initially planned it was recognized by the planners that the two irrigation districts are still paying off the bonded indebtedness incurred by construction of existing works and that the tax rates to pay for the maintenance and operation of the districts and the bonded indebtedness is at a maximum level at this time.

It was, therefore, considered essential that the additional storage facilities proposed must be paid exclusively from project revenues. Upon an investigation of possible storage sites on the Stanislaus River, it was determined that the economic feasibility of any storage project depended upon the development of hydroelectric power as a byproduct of the operations.

In order that the committee may have the findings of its engineer before it, I am filing an excerpt from a report to the boards of directors of the Oakdale Irrigation District and south San Joaquin Irrigation District, dated September 30, 1949, prepared by Richard W. Shoemaker, a consulting electrical and mechanical engineer:

LOCAL DISTRIBUTION

The question of the sale of electric energy through a local distribution system, owned and operated by the districts as a means of financing the project, was considered, and the following estimate made for both districts combined:

Assumed total acreage within distribution system, 143,457.
Total number of assessments, 8,528.
Number of persons per assessment, 3½.
Total population, 29,800.
Estimated number of customers, 8,800.
Total kilowatt-hours required per year, 52,500,000.

At 45 percent load factor, this would require 13,200 kilowatts to generate this power with a hydroelectric plant, and with Stanislaus River waterflow conditions there would be required a dam holding approximately 120,000 acre-feet and providing a fall of not less than 150 feet.

Estimated cost of power development: 16,000 kilowatts	$1,600,000
Necessary dam	9,500,000
Transmission lines	300,000
Power development cost	11,000,000
Distribution system—740 miles of line	1,370,000
Services, meters, etc	666,000
Total	2,036,000
Total investment or $1,520 per customer	13,430,000

A comparative figure for the TID is $494; MID 347.

Expenses per year would consist of:	
Interest and amortization	550,000
Operating expense	185,000
Total	735,000
Possible gross revenue that might be attained per year	826,000
Theoretical profit	91,000
Estimated revenue per customer per year—Oakdale	9.30
Actual revenue per customer per year—Modesto	9.70
Actual revenue per customer per year—Turlock	8.40

Note that the cost per kilowatt-hour generation of 8.9 mills is about 1.62 times as much as the same power which can be purchased from the Bureau of Reclamation.

In addition to the generating facilities described, it is most probable that a reserve or standby service would be required to insure the availability of power in dry years. This question was not studied as it was perfectly evident that local generation of power was not feasible from a practical cost standpoint.

There would be little benefit to irrigation from the water stored as above for power purposes, as the dam would have to be operated solely from the standpoint of power requirements.

It is evident from the above analysis that the possible net earnings of an electric generating and distributing system within the districts could not possibly or even approximately meet the requirement necessary for financing water-storage facilities for irrigation.

There is no legal reason why the districts could not engage in the distribution and sale of electrical energy, but under present and reasonably distant future conditions it would appear to be better for the districts to purchase electrical energy for this purpose rather than to try and generate it by means of steam or hydro.

The question of the desirability of the districts setting up their own local power distribution and sales organization with purchased power was not studied.

CONCLUSION

I believe it is to the best interests of the districts to endeavor to secure a firm contract for power from a responsible organization, which will enable the districts to construct, operate, and own the Donnells Flat Dam and high head powerplant, the Beardsley Dam, with no power development at present, but reserving such rights for the future, and the Tulloch Dam and associated powerplant.

Owing to the fact that the Pacific Gas & Electric Co. already have powerplants on the Stanislaus River that will be benefited by these devolpments, I believe this organization is the logical one to purchase the power.

It is my opinion that with money available at less than 3 percent, the project as outlined can be made to pay its way in conjunction with the P. G. & E., and give a reasonable cash profit to the districts.

I further believe that the outlined project can provide a substantial increase in the yearly amount of water available to the districts for irrigation.

R. W. SHOEMAKER.

OAKLAND, CALIF., *September 30, 1949.*

The Tri-Dam project therefore includes a powerplant below each dam to be owned and operated by the districts. The districts also investigated all possible markets in California for the power to be produced. This included the Southern California Edison Co., the Turlock and Modesto Irrigation Districts, the Bureau of Reclamation, the Los Angeles Bureau of Light and Power, the Sacramento Municipal Utility District, and the Pacific Gas & Electric Co. Except for the Pacific Gas & Electric Co., these distributors of power could not use all of the power or could not pay a sufficient price for the power to make the project economically feasible.

The districts also thoroughly investigated the feasibility of establishing and operating a distribution system of their own to dispose of the power. This plan proved impractical for there was no way to finance such a system in conjunction with the Tri-Dam project and the consumers within the districts and the area proposed could not use all of the power to be produced during periods of maximum power production. This plan proved economically infeasible.

Consequently, the districts entered into a contract with the Pacific Gas & Electric Co., after more than 2 years of negotiation, for the sale of all power to be produced on the basis of fixed annual payments to the districts. This contract that I refer to is attached as exhibit C to the memorandum that has been introduced.

I want to point out with respect to this contract that once the project is completed and in operation the contract guarantees the fixed amount of the payments irrespective of the amount of power produced. In other words, the payments which are fixed are absolutely guaranteed and should be considered firm security.

With respect to these payments, I would like to explain graphically a chart which is attached to the memorandum and noted as exhibit D. This chart illustrates the breakdown of the payments as negotiated in the contract with Pacific Gas & Electric Co. I would like to point out that the vertical line indicates the net annual income to the districts, which under the maximum conditions amounts to

$2,506,000 per year. The horizontal line indicates the period of time that this contract is expected to run.

You will note that the amount of the payment of $2,506,000 is broken down so that $302,000 per year is set aside for maintenance and operation. This is subject to adjustment in accordance with a labor index. The remainder of the payment, which starts out at $2,204,000 per year, is set aside to retire private bonds and is the security which the bond buyers must rely on in buying the bonds of the districts.

I wish to point out that part of this amount is income to be received from the Melones powerplant which is owned by the Pacific Gas & Electric Co. The amount of $136,000 per year which is shown in yellow on the chart is derived from the headwater improvements to that plant.

Under present conditions the license which the Pacific Gas & Electric Co. holds expires in 1977, but under terms of the contract they will continue to make payments to the districts so long as they have the right to operate that plant. The same thing is true of the Stanislaus powerplant from which the districts will receive $604,000 yer year as headwater improvement values to that plant. You will note that the present license expires in 1985.

The income there will continue to come to the districts so long as they have the right to operate the plant.

There are two things which I would like to point out specifically relative to this bill. That is, the income to be derived from the Melones powerplant after 1977 is to be set aside as security for any funds which are to be used by the districts and supplied under this bill. Also, the payments which the districts will receive after 1985 from any revenue from headwater improvements to the Stanislaus plant will be set aside to repay the Federal Government for any funds used.

You will note that under this plan and the amounts of payments set up in our contract with the power company, that if the full amount of the proposed loan is actually used in the amount of $10,370,000, this amount will be repaid in full by 1998. If, however, only the $1,147,000 is used, which is estimated under present conditions to be needed to complete the construction of the project, then it would be paid off by 1985 by the districts.

So under these conditions there is adequate value there, whether paid by the power company or others, to adequately insure repayment of the proposed Federal loan. There is also a secondary source of income to assure repayment of any Federal loan. That is the continued income from the project, from all of the powerplants, after amortization of the private bonds. It is set aside in the terms of this bill as additional security and would be the secondary source of security to the Federal Government.

I would like to briefly review the amount of money which the districts can raise from the sale of private bonds. I would like to refer to a bond chart which is attached as exhibit E to the memorandum that has been introduced. I want to point out, as previously stated, that when the districts planned this project and proceeded with construction plans in 1952, the districts expected to sell their bonds at an interest rate of less than 3 percent.

Plans were made at that time to receive construction bids and bond bids in April-May of 1953. But during the period of advertisement,

in the spring of 1953, the interest rates rose very drastically and Government bonds increased from 2½ to 3¼ percent interest on April 1, 1953.

At that time, when the districts were planning to proceed, the predicted interest rates on the districts' bonds proposed to be issued were quoted by responsible financial experts at a rate in excess of 4 percent. As the districts' revenues for securing the bonds are fixed in amount, an increase in interest rates had the effect of reducing the amount of funds available to construct this project. Exhibit E attached to the memorandum illustrates graphically the effect of the increase in interest rates on the amount of funds available for the construction.

You will note that the vertical scale on the chart is the amount of bonds that can be amortized in millions of dollars, and the horizontal scale indicates the various interest rates which might be applied. The blue line at the top indicates the estimated cost of the project, $47,647,000. You will note that under 3 percent conditions the districts under a 50-year amortization plan could raise approximately $49,700,000, which is more than the estimated cost of the project.

You will note, also, as the interest rates increased to 4 percent, the districts could raise only $43,100,000. At 4½ percent, which was at one time considered as a possible interest rate, the districts could raise only $39,800,000. I believe this illustrates the importance of the interest rate on the financial feasibility of this project. Under present conditions we are advised that with adequate reserves the districts can sell their bonds at 3½ percent or less, under which conditons the district could raise $46½ million, approximately, which is $1,147,000 short of the estimated cost. If the districts are fortunate enough to sell their bonds at 3 or 3¼ percent, it is estimated that no Federal funds would be actually used.

I wish to point out that the districts are asking for the full $10,370,000 to be made available due to the fact that in order for the bonds to be made salable at public sale the districts must have available sufficient funds to assure the completion of the project on schedule. In order to do that we must have sufficient reserves to cover overruns in construction cost which might occur, and secondly, the districts must have sufficient funds to pay for extra cost of interest during the construction period in the event the project is unavoidably delayed during the course of construction.

Our financial advisers have indicated that the availability of Federal funds in the amount of $10,370,000 will be sufficient reserves under present conditions.

I want to point out, also, that the amount of $10,370,000 was arrived at by determining the estimated cost of the irrigation features allocable to irrigation by using a standard formula used by the Bureau of Reclamation. The basic data supporting this amount is listed in brief form in the memorandum which has been introduced for the record.

In conclusion, I want to emphasize the following points: The project which we have discussed is completely engineered and ready to start construction.

Secondly, the probable cost of the project is very closely established due to the fact that construction and equipment bids were actually received by the districts in 1953.

Third, the project would have been successfully financed through the sale of private bonds except for a drastic sudden change in the bond market during that period.

Fourth, under present conditions the districts estimate that not more than $1,147,000 of Federal funds would be actually used to complete the project, although the $10,370,000 is needed to set up a sufficient reserve as a guaranty that the project will be completed and placed in operation.

Fifth, the districts have definite and guaranteed revenues from a power-sale contract which assures the repayment of the Federal loan within 50 years from the date of commencement of power production.

Sixth, the districts believe that the Tri-Dam project will provide public benefits of the same type as those multipurpose projects constructed by the Bureau of Reclamation. Therefore, this project is deserving of the same consideration as Federal projects producing the same benefits. In this case, however, the cost to the Government for the public benefits is far less than the normal contribution by the Government on federally constructed projects.

That completes my testimony, Mr. Chairman.

Thank you.

Senator KUCHEL. Mr. Stivers, thank you very much.

We do not have the complete membership of the subcommittee in attendance here, and in order to have a record which will be of assistance to the bill you are sponsoring we need as complete a record as possible. There are none here who would cross-examine you based on their own concept of the Eisenhower partnership philosophy. I want, however, to have the questions raised, which I am sure some of the members of the committee might raise. I want that by way of anticipation so that this record will be complete.

So first of all, I would like to have you develop in a detail what you touched on in your prepared statement. You have suggested that here is an instance where local public agencies in California have held elections relative to the sale of revenue bonds to sponsor a local project in which originally no Federal participation was envisioned, but by reason of the change in interest rates on securities you have found yourselves in a position where you now ask the Federal Government to participate.

You suggested that you had inquired in past years relative to the possibility of constructing your own or building your own transmission lines and of selling the power yourselves. There will be some, I am sure, in the Congress who would want that philosophy followed completely.

You suggested that in that inquiry you dealt with the Bureau of Reclamation as a possible purchaser of your power. So that those members of the committee who will study this record will have the facts before them, can you now testify as to the period during which you explored the possibility of producing and selling your own power, and particularly to the Bureau of Reclamation? What period did those negotiations cover, and why did the Bureau of Reclamation decline to enter into a contract with you?

Mr. STIVERS. Mr. Chairman, with respect to the period of study conducted by the districts to examine into these matters, I wish to state that during the years approximately starting in 1947 and being completed September 30, 1949, the irrigation districts employed a professional engineer of high standing, Mr. R. W. Shoemaker, to conduct a survey for the two irrigation districts to explore the possibility of establishing a distribution system for disposal of the power. Mr. Shoemaker was highly qualified with many years of experience in

assisting in establishment of public-owned power-distribution systems. I want to state it was his conclusion that the districts could not economically construct their own distribution systems and distribute the power from this project because of two factors.

One was the nature of the power being such that in the spring and summer of the year when the principal runoff of the river occurs there was a very substantial amount of energy generated which the possible service area could not absorb. Secondly, during dry periods there was not sufficient power produced to supply the area. So it would place the district in the position of trying to sell power, surplus power, in this case during periods when power would be very cheap and would place them in the position of buying power when power was short and at a high price. It was the nature of the power production in this project which made it economically infeasible for the districts to distribute.

Senator KUCHEL. Is that what you professional people term a lack of firm power?

Mr. STIVERS. Yes. There was a lack of firm power during low water periods and an abundance of power which would be in surplus during other periods.

Senator KUCHEL. During the time of which you speak, were negotiations held with representatives of the Bureau of Reclamation?

Mr. STIVERS. Mr. Chairman, I do not recall the exact dates but there were contacts made with the Bureau of Reclamation, and from time to time we did have discussions with their local representatives with respect to the possibility of the sale of the power to the Bureau to be distributed in their system in California. We were advised by their representatives that they were unable to buy our power.

Senator KUCHEL. Did they give any reason for that at that time?

Mr. STIVERS. It is my recollection that they were not authorized to purchase power for distribution in this manner.

Senator KUCHEL. Did they indicate any desire to endeavor to obtain the appropriate authorization so that it might be accomplished?

Mr. STIVERS. Not to my knowledge. In fact, it is my recollection that they indicated they had no possible customers for that power at that time and that the price offered by the Pacific Gas & Electric Co. to the districts was higher than the rate the Bureau was receiving in California for its power.

Senator KUCHEL. And at that time you did not contemplate in any fashion asking the Federal Government for financial assistance in the building of the Tri-Dam project?

Mr. STIVERS. No, sir. We expected to finance the project 100 percent by private means.

Senator KUCHEL. Can you describe in general language the area which the two districts cover, the geographical area?

Mr. STIVERS. Yes. The two districts are located in the counties of Stanislaus and San Joaquin in central California, approximately 70 miles east of San Francisco, and incorporate 143,000 acres, approximately, of which about 121,000 are under irrigation at the present time. They are nearly fully developed at this time as far as agricultural cropping is concerned, but it is a question of supplying a supplemental supply of water which is needed nearly every year to fill out the needs of the districts and is badly needed for holdover storage to carry water over from wet years to dry years.

Senator KUCHEL. Is any of your water sold outside of the memberships of the two districts?

Mr. STIVERS. No. I would say there is none sold. However, the districts do supply a very, very limited amount of water to lands outside the district by virtue of early agreements of water rights on the Stanislaus River.

Senator KUCHEL. It is a question of the laws of California relative to water rights?

Mr. STIVERS. Yes. It was the result of agreements respecting the water rights of the districts.

Senator KUCHEL. How old are the two public agencies you represent?

Mr. STIVERS. They were organized in 1909 and proceeded immediately with the construction of their distribution works.

Senator KUCHEL. Does your memorandum you filed previously include a record of the landownership in the two districts?

Mr. STIVERS. I would like to refer that to another witness more qualified than I, Mr. Minasian.

Senator KUCHEL. You heard the question; can you give an answer?

Mr. MINASIAN. Exhibits F and G in the memorandum before you contain a tabulation or schedule of the landholdings and the sizes of them in each of the two districts. I would like at this time to introduce a supplement to exhibit F which is a further breakdown of the landholdings in excess of 251 acres. That is, the farms in excess of that size. It is a further breakdown of those holdings in the Oakdale Irrigation District showing the names of the owners, the number of people that actually own each farm, whether they are married or single, the acreage, the number of private pumps they have, and the capacity in second-feet of the pumping plants they have on those farms.

Senator KUCHEL. It will be received and made a part of this record.

(The material referred to follows:)

SUPPLEMENT TO EXHIBIT F

Analysis of all land holdings in Oakdale Irrigation District in excess of 251 acres

SIZE OF HOLDINGS, 251 TO 320 ACRES

Name	Status (married or single)	Acreage	Number of private pumps on property	Total capacity (in cubic feet per second) [1]
Aguiar, Frank P. Aguiar, Mary I. Rocha, John N., Jr. Rocha, Frances J.	Married	279.8	3	4.7
Amaral, Antonio and Mary	do	293.6	2	5.7
Brichetto, Paul J.	do	278.3		
Brichetto, George L.	Single			
Harvey, C. B. and Jean A.	Married	253.3	1	2.5
Jeffry, Renaldo J. Mears, Cecelia K. Van Etten, Mae K.	do	318.0		
Kaufman, L. C.	do	270.4	1	2.5
Kohrs, Raymond F. and Rose E.	do	257.9	1	3.0
Nickolauson, Paul G.	do	300.1	2	6.0
Spalding, Charles H.	do	278.7	2	6.3
Strojan, Walter G.	do	276.0	3	7.4
Allen, Gordon W. and Mary K.	do	260.1	3	7.0
Lorenzen, R. W. and Blanche C.	do	286.0	1	3.5
Sanzberro, Justo and Florence	do	306.5	2	3.4
Bishop, Ruth B.	do	296.6	2	5.5
Shipley, Bessie L.	Estate			

Analysis of all land holdings in Oakdale Irrigation District in excess of 251 acres—Continued

SIZE OF HOLDINGS, 321 TO 400 ACRES

Name	Status (married or single)	Acreage	Number of private pumps on property	Total capacity (in cubic feet per second) [1]
Benedix, Edwin M Benedix, Max W Benedix, Richard B., Jr Benedix, Walter F Benedix, Richard, Sr	Married	390.8		
Brazil, A. S. and Mary V	do	353.8	2	4.2
Brown, Raymond Brown, Joseph A	do	357.0	2	5.0
Codoni, Jos	do	328.3		
DeBoer, Joe and Hazel	do	354.8	3	3.5
H. Moffat Co., a corporation, ½ Westover Co., a corporation, ½		371.5	2	5.0
Nicholson, Janis Nicholson, Ann Nicholson, Louis F		321.0		
Schultz, Edward A	do	348.8	1	3.0
Hansen Co., Ltd., N		358.2	2	6.3
Schwoerer, Elgin and Belle	do	350.6	1	3.0
Brown, Harry E	do	348.4	2	5.0

SIZE OF HOLDINGS 401 TO 600 ACRES

Aguiar, Adrian	Single	441.8	2	4.1
Toste, Domingo and Rosalie	Married			
Boothe, Clyde D	do	420.2	3	6.3
Boothe, Doris Irene	do	496.0	2	4.9
DeBenedetti, Frank J. and Agnes	do	566.9	3	9.3
Dunn, James C	do	426.9	3	7.5
Gambini, Antonio and Basilia	do	418.3		
Kaufman, S. K	do	418.1	2	5.3
Mensinger, W. R. and Alma	do	487.2	1	2.0
Rodden, V. A., Inc	do	446.0	3	8.2
Smith, Emmett and Ann E	do	405.7	2	5.1
Waeny, James Lutz, Florin	do	590.9	1	4.9
Abbott, Elbert D. and Margaret G	do	401.0	2	4.0
Kesterson, Irving E., Jr	do	566.0	3	6.9
Powers, Edward D. and Mabel D	do	502.4	2	4.7

SIZE OF HOLDINGS, 601 TO 800 ACRES

Boothe, Everett P	Married	620.8	1	3.8
Johnson, Edward and Velma M	do	722.2	3	10.0
Nelson, Nate and Maude A	do	663.6	3	9.1
Priddy, Charles W. and Maxine R	do	638.0	2	8.
Salyer, O. E	do	657.0		
Valk, Harvey L. and Sadie P	do	678.9	5	12.5
Kesterson Properties, Inc		687.0	4	9.0
Kistler, Ray H. and Violet P	Married	711.3	2	5.0
Kistler, Peter John Kistler, Ray H., Jr Kistler, Frances Ann	Single	606.9	2	5.4
Sawyer, J. L	Married	659.9	2	5.2

SIZE OF HOLDINGS, 801 TO 1,000 ACRES

Hanson, B. V. and Mildred B	Married	834.9	4	12.8
Wyatt, Frank and Mary E	do	986.3	2	6.0
Terry, Maria	Single	898.1	3	13.0

SIZE OF HOLDINGS, 1,001 TO 1,200 ACRES

Sonora Products Co		1,168.4	5	20.8

SIZE OF HOLDINGS, 1,201 TO 1,500 ACRES

Brichetto, Paul J. and George L., trustees (representing 8 heirs).		1,506.8	4	10.0

[1] 1 cubic foot per second will irrigate 100 acres of irrigated pasture.

Mr. MINASIAN. As has been already pointed out, these districts are already largely developed and have been for a great many years. They are old districts organized in 1909. Of the 143,000 acres in the districts, 121,000 are now irrigated. The balance is in small holdings. There is no undeveloped land for speculators to reap a profit from as a result of water being made available.

These lands are irrigated by water and storage already acquired and paid for by these landowners. The water rights have been adjudicated by the courts of California many years ago as belonging to those landowners.

An examination of exhibit A attached to the memorandum offered in evidence demonstrates that in terms of quantity the additional amount to be supplied by the Tri-Dam project is relatively small as compared to the existing water supply of the districts.

The many rather than the few will benefit. The size of holdings is small. As pointed out, the average size farm in the South San Joaquin Irrigation District, excluding holdings under 1 acre, is only 23.72 acres per farm. In the Oakdale Irrigation District it is 38.8 acres.

The size of holding in the South San Joaquin Irrigation District is shown on exhibit G in the memorandum before you. Most of the few farms of any size are in multiple ownership as shown by the exhibit, but that does not show the entire story as these multiple owners are in almost all instances married and community property rights further divide the acreages. Furthermore, many of the multiple ownerships are the ownerships of several persons rather than just two. For example, the largest holding shown on exhibit G is owned by a family of 5, all adults, and all 5 are married.

The situation is the same in the Oakdale Irrigation District, as will be seen from an examination of exhibit F attached to the memorandum. We have further broken that exhibit down by the supplement to exhibit F that we have just introduced. It shows the multiple ownerships, the marriage status, and the pumping plants, so far as the larger holdings are concerned. A second-foot of water will irrigate 100 acres of irrigated pasture, the principal crop. All of the larger ownerships have pumping plants. Exhibit F, plus the supplement to it, shows that in the Oakdale Irrigation District, also, the holdings are small and other sources of water will more than take care of any excess lands.

Senator KUCHEL. The only question I want to ask at this point before we continue with Mr. Stivers is this: You say that there are pumping plants located in most of these farms which would irrigate their lands?

Mr. MINASIAN. In the Oakdale Irrigation District, that is true on the larger farms.

Senator KUCHEL. So that the record will be clear on that point, particularly to the lay members of this committee, what use is made of those pumping plants in view of the fact you do have these present storage dams on the river?

Mr. MINASIAN. The storage lasts only for a portion of the irrigation season and sometime in July, usually around July 1, a curtailment must be made. That is, the amount of water that each customer will receive is reduced and his rotation is extended. Then, further on in the season, that water runs out completely and the district must stop

furnishing water. Then these people use these pumping plants. The pumping plants, though, are not an answer to their problem because the water table is steadily dropping and it is only a period of time when those pumping plants will probably be completely inadequate.

Senator KUCHEL. Do you have any statistical information on the water tables in the area that might be supplied?

Mr. MINASIAN. The Oakdale Irrigation District relies on pumping from underground sources for a small portion of their water supply. The irrigation district owns 24 deep-well pumps with a total horsepower of 1,255. There are 139 privately owned deep-well pumps within the district, with a total horsepower of 5,470.

The pumping operations have resulted in a consistent lowering of the water table. During the period of 1944 to 1953 the average water table dropped 13 feet.

Senator KUCHEL. Mr. Stivers, you also mentioned that some negotiation in the past, at a time before you came to Congress for assistance, was had with the Sacramento Municipal Utility District relative to the possibility of their purchasing power which might be generated under this project. Can you describe what took place and why no contract was entered into?

Mr. STIVERS. I might say that the contracts that were made with that organization might not be considered negotiations, but inquiries were made with representatives of them to determine if it were possible that they might be able to use this power in their system. It was determined first of all that they were using power through the Central Valley system, which I understand was at a price substantially below what would have to be paid for our power in order to make the project feasible.

Secondly, they already had a power supply which was adequate and they had proposed at that time, and are still carrying on, plans for constructing their own production system of power.

Senator KUCHEL. Now I am sure that members of the committee and Members of the Congress would like to explore with you a little bit this question of Federal participation on an interest-free basis. Can you state for the record why you believe the bill should provide for interest-free money?

Mr. STIVERS. Mr. Chairman, the question of interest-free loans for this type of project, I believe, has an adequate precedent due to the fact that the loan which is proposed under this bill would apply only to the irrigation features of the project and would supply water to public agencies in California. This policy, I believe, is very similar, if not exactly the same, as a policy that is carried out under the Reclamation Act by the Bureau of Reclamation in constructing facilities for stored water and furnishing stored water and constructing distribution systems for irrigation districts where public agencies or lands are involved.

In the case of the facilities constructed by the Bureau of Reclamation, it is my understanding that the funds are provided for the irrigation features on an interest-free basis and the landowners pay back only the principal amount of the loan. In our case, which is exactly parallel, the request is only for funds covering the irrigation features of the project. But in this case we are requesting only the amount which is needed to complete the project, which in no event can exceed

the irrigation allocation, but may amount to nothing if we are able to sell our bonds at a reasonable interest rate.

Senator KUCHEL. Do you have a copy of the bill as recommended be amended by the Department of the Interior?

Mr. STIVERS. Yes, we do. That was introduced earlier.

Senator KUCHEL. Perhaps the Department of the Interior is going to develop their recommendations, but generally speaking, will you state what the bill provides with respect to the moneys to be appropriated to whom and made available to the districts under what conditions?

Mr. STIVERS. I would like to refer that to Mr. Minasian.

Mr. MINASIAN. The bill provides that the money is to be loaned, the $10,370,000 which is the portion of the cost of the project which is properly allocable to irrigation, and is to be set up as a reserve and used only to the extent necessary to finance the construction of the project if private financing is inadequate.

Section 2 of the bill provides that before the money is disbursed, a contract must be entered into with the Secretary of the Interior which shall provide a number of things. In the first place, the contract must provide that the loan shall be disbursed only to the extent necessary to pay the costs after all private financing is exhausted. It further provides that the districts must sell the maximum amount of revenue bonds that can be sold to be paid for from the proceeds from the project in order that the maximum amount of the project will be financed from the sale of private bonds.

Then the next subdivision of section 2 provides for the allocation of the revenues from the Melones and Stanislaus powerplants to the payment of the Government loan if any of it is called upon. I might add that there is an allocation of the revenues from those plants regardless of who owns them.

No doubt the Federal power licenses will be renewed to the Pacific Gas & Electric Co. because those are just two plants out of a very large system. It is hard to conceive of anyone else operating those plants. But even if that is not done, they will be issued to someone. Those plants will not remain idle. Under the law, we will receive the headwater benefits, which it is reasonable to assume will be substantially the same payments Pacific Gas & Electric is agreeing to make, so that those revenues are in the class of assured revenues.

The next provision in section 2 provides that in any event the total amount of the obligation to the Federal Government is owing prior to the 50th anniversary of the first production of power.

The next provision is that the contract with the Secretary of the Interior shall contain such other provisions as he finds pertinent to protect the Government.

I might add that of course selling our bonds at the very lowest interest rate possible is of the essence, and under the law we must offer them for competitive bidding. We are advised by probably the biggest bond house on the coast, Blyth & Co., which has been employed by the districts so they will have expert advice. In addition to that, I am sure one of the provisions that will be in that contract with the Secretary of the Interior will be that the Secretary will have the final word, the final examination of those bond bids before any Government loan is disbursed. So that situation is covered and can be covered under that general clause.

About the only change in the bill as redrafted from the wording of the original printed bill is this: That in the printed bill there was a provision that in the event the Melones and Stanislaus licenses were not renewed or were renewed or issued on conditions that were less favorable to the districts than the present licenses, a portion of this loan from the Government would be forgiven. The revised language of the bill changes that and provides that none of the loan is forgiven, but in the event that those conditions occur which mean that the districts receive less revenue from those two projects, the period of the loan will be just extended long enough so it can be paid off.

Senator KUCHEL. This constitutes an authorization to the Secretary of the Interior to make a loan under certain conditions, and therefore if this bill were to become law, a congressional appropriation would be required.

Mr. MINASIAN. That is correct.

Senator KUCHEL. Is it your hope that if this bill were to become law at this session you would likewise this session request Congress to make an appropriation?

Mr. MINASIAN. Certainly, that is our hope. Whether or not it can be accomplished is another question. It would be most desirable as construction in that event would proceed immediately. Since private funds must be first exhausted, Government funds would not in any event be called upon until the end of the probable three-year construction period.

Senator KUCHEL. Before the Department of the Interior representative, Mr. Bennett, testifies, I would like to have you, Mr. Minasian, or one of the other witnesses here comment on the recommendations of the Army engineers. You earlier stated that the revised bill contains the recommendations of the Department of the Interior. There is one additional recommendation, as you know, from the Corps of Engineres relative to its proposed amendment. Would you state the position which the districts' representatives take on that proposed amendment? Perhaps it first should be read into the record.

The Secretary of the Army recommends, and I quote from his letter:

> With respect to section 3 of the bill it is suggested that the following language be added at the end of subparagraph B: "The contract shall contain provisions that plans for flood-control features of the project shall be subject to approval by the Corps of Engineers prior to construction and that the project will be maintained and operated for flood control at the expense of the irrigation districts in accordance with rules and regulations to be prescribed by the Secretary of the Army."

Mr. MINASIAN. That language is not agreeable with the districts. In fact, it is unworkable. The only point of difference that we have with respect to that language is that the proposed bill we have introduced provides that the plans for flood control shall be subject to approval by the Corps of Engineers prior to any grant of flood-control benefits being made.

The substitute language proposed by the Army engineers requires that approval be given prior to construction. That change is very objectionable to the districts, and it is unnecessary for the following reasons:

The effect of that change is to move the date of approval by the Corps of Engineers back from the date of the grant of loan, back to the date of the period of construction, prior to the period of construc-

tion. This project will be operated primarily for irrigation and secondarily for power. Flood control is merely incidental. We do not expect or plan on any flood-control grants being made prior to construction. Admittedly, the flood-control allocation of cost would be relatively minor, although the benefits that would result would be very important. They have not been determined at this time. They may not be determined for a number of years.

On the other hand, the project is now ready for construction and we cannot afford to be held up for the years required to determine and plan the flood-control benefits. The purpose of the flood-control provision in the bill is simply to hold the door open for future consideration by Congress and the Army engineers at some future date. Complete control is left in the Congress and the Army engineers.

The money must be appropriated and the grant will not be made even after the appropriation is made until the contract for the flood-control benefits is approved by the Army engineers.

Senator KUCHEL. You are stating that as a fact?

Mr. MINASIAN. That is a fact and is provided in the bill before you. We recently pointed this out to the Army engineers within the last week, and I believe it is accurate to state they were unable to state any reason why the contract with the Army engineers should be required prior to construction in place of being prior to the grant, except they pointed out by first constructing the project the districts were taking a chance on later receiving any flood-control benefits. Of course, that is true and that is a risk that the districts are perfectly willing to take.

Senator KUCHEL. Did the Army indicate any disposition to recede from this recommendation?

Mr. MINASIAN. No. The time was short and they indicated they could not have to clear another statement with their various departments, although they stated that the most they could do would be they might have someone here at the hearing. I do not believe there is anyone here.

Senator KUCHEL. Is anyone here representing the Corps of Engineers?

I think the staff should have any additional statement made by the Army engineers on their point before this transcript is completed.

Mr. MINISIAN. Their principal concern seemed to be the question of whether or not their project would in any way interfere with their present plans for levees on the San Joaquin and for possibly Greater Melones.

Senator KUCHEL. Would that be a project other than the Melones Dam which you pointed out on the map?

Mr. MINASIAN. That would be a project located right between the dam and the powerplant which would inundate the existing Melones Dam. The Tri-dam project does not interfer with the new Melones project in any way. As a matter of fact, we have worked out an agreement with the Bureau of Reclamation so that if that dam is ever built, our Tulloch Dam will serve as an afterbay for the dam. So it will actually benefit that project.

As a matter of fact, the Army engineers and the Bureau of Reclamation have both approved this project through the Federal Power Commission before the licenses for the Tri-dam project were granted.

Senator KUCHEL. At the time the Power Commission granted you licenses, you state that the Army engineers and the Bureau both approved the plan which this bill would assist in financing?

Mr. MINASIAN. That is correct. The Bureau of Reclamation through the Secretary of Interior and the Army engineers through the Secretary of the Army.

Senator KUCHEL. Is there any other statement that you can develop for the hearing by way of anticipating any objection which might be raised?

Mr. MINASIAN. Our engineer, Mr. Shoemaker, at the time he was investigating the possibility of selling this power to other public agencies also contacted the representatives of the Los Angeles Bureau of Power & Light. They considered this and they finally concluded the amount they could pay for the power could not compete with the rate offered by the P. G. & E. Mr. Koster has also contacted the Los Angeles Bureau of Power & Light and other public agencies.

Senator KUCHEL. Mr. Bennett.

Thank you, gentlemen.

STATEMENT OF ELMER F. BENNETT, LEGISLATIVE COUNSEL, DEPARTMENT OF THE INTERIOR

Mr. BENNETT. My name is Elmer F. Bennett. I am legislative counsel for the Department of the Interior.

My statement will be exceedingly short. We have discussed the proposal of the irrigation districts here over a period of several months. The Secretary is very favorably impressed with the efforts that these people have made to accomplish the development of a natural resource on their own behalf and with their own efforts. So far as the Department of the Interior is concerned, we submitted a report recommending enactment of this legislation, indicating we would prefer certain amendments. Some of those amendments have since been discussed with the representatives of these districts, and we are in substantial agreement with the revised draft which they submitted today.

In fact, we fully recognized that the one basic difference between the bill as submitted by the Department and the revised draft which they have submitted is based on a sound principle from the standpoint of assuring the best possible market for their private bonds and the most favorable interest rate. That particular difference lies in the fact that as the language was submitted by the Department the amount of loan authorized was limited by several factors.

First, the maximum amount under any conditions was set at $10 million plus, as was indicated by prior testimony this morning.

The second limiting factor is that the loan under no circumstances shall exceed that amount which would be equitably allocable to irrigation features of the project.

Senator KUCHEL. Under Federal law?

Mr. BENNETT. Yes.

The third factor, which was expressly stated as a limit on wherever appropriate and feasible:

In the next fiscal year work will be started on 23 projects that meet these standards. The Federal Government will continue to construct and operate economically sound flood control, power, irrigation, and water-supply projects

whereever these projects are beyond the capacity of local initiative, public or private, and consistent with the needs of the whole Nation.

Mr. Chairman, the Department of the Interior endorses the efforts made by these people to accomplish the maximum degree of self-help. We commend them for the fine job they have done toward that end. We believe it is consistent with the policy of the administration. We, therefore, recommend enactment of appropriate legislation to accomplish the objectives they have stated to you today.

Senator KUCHEL. Thank you, Mr. Bennett.

A question or two occurs to me. The representatives of the districts have stated that with respect to the interest-free feature of your proposed legislation there is and has been precedent. I wonder if you would comment on that.

Mr. BENNETT. The precedent which they have in mind, of course, is the existing Federal reclamation law. The Federal funds have been made available on a reimbursable basis for irrigation features of reclamation projects for over 50 years. In all that time, to my knowledge, there never has been a charge of interest levied against the water users.

Senator KUCHEL. And that has continued to be the policy of the Government of the United States from the time of the original reclamation statutes?

Mr. BENNETT. That is correct, sir.

Senator KUCHEL. Is there anything further by anyone?

If not, this subcommittee will now adjourn, and I will ask the staff to contact the Corps of Engineers relative to any additional comments it cares to make on the recommendations made in Secretary Stevens' letter.

Secondly, I will ask Mr. Koster to file a statement for the record of the hearings respecting efforts of the district to sell the power output to public agencies. I understand he has had some experience in this connection.

(The matter referred to is as follows:)

STATEMENT BY EDWIN KOSTER, PRESIDENT, BOARD OF DIRECTORS, OF THE OAKDALE IRRIGATION DISTRICT, RESPECTING EFFORTS TO SELL THE ELECTRIC POWER OUTPUT OF THE TRI-DAM PROJECT TO PUBLIC AGENCIES

Early in 1951 Mr. R. W. Shoemaker, consulting electrical and mechanical engineer of the Oakdale and South San Joaquin Irrigation Districts, suggested that I make some contacts with public agencies with respect to selling the power output of the Tri-Dam project. Although Mr. Shoemaker had, at the request of the boards of directors, made an earlier study and investigation of the possibility of selling the power to public agencies he thought that, as president of the board of directors, I should do some inquiry on behalf of the board. He specially urged me to see Mr. Samuel Morris, general manager of the Los Angeles Bureau of Light and Power, since he represents a responsible and large enough organization to contract for the entire output of the districts' power.

I phoned Mr. Morris and made an appointment for myself and another director to discuss the possibility of the sale of the Tri-Dam power to the city of Los Angeles. The meeting was held with Mr. Morris a few days later at which I was present. The question of the availability of power-transmission facilities and its related problems and rates were thoroughly discussed. The conclusion finally arrived at was the same as had previously been reported to the boards by Mr. Shoemaker and stated by Mr. Morris; that the high cost of constructing the long transmission lines required to tie the districts' development in with their system, together with an estimated loss of 2 mills per kilowatt in transmission due to the extreme hazards of crossing the Sierra Mountains, would

make it impossible for the Los Angeles Bureau of Light and Power to compete with the price offered by the Pacific Gas & Light Co. who already have transmission facilities and power development in the Tri-Dam project area on the Stanislaus River. This offer is now incorporated in the Tri-Dam project contract.

I was also present at a meeting arranged with Mr. Clifford Plummer, chief engineer for the Modesto Irrigation District, to discuss with him the possibility of selling Tri-Dam project power to the Modesto Irrigation District for distribution in its existing system. Mr. Plummer stated that the Tri-Dam project power delivery would not fit into their powerload and that they could not contract to purchase the power output. A similar meeting at which I was present was held by Mr. Roy Meikle, chief engineer for the Turlock Irrigation District, with the same results.

I was present at several meetings with Mr. Ben Creim, then chief electrical engineer for the Bureau of Reclamation regional office in Sacramento, and also with Mr. Jack Rodner and Mr. Carl Kadie who succeeded him in charge of the Stockton office of the Bureau of Reclamation. The purpose of those meetings was to discuss possible sale of Tri-Dam project power to the Bureau of Reclamation. The conclusion arrived at, and stated to the districts' representatives by the Bureau representatives was that the Bureau of Reclamation was not authorized to purchase power and that the proposal was not feasible for the reason that the districts' selling price for Tri-Dam project power, as determined by the offer of the Pacific Gas & Electric Co., was higher than the price at which the Bureau of Reclamation was offering to sell its power to the Sacramento Municipal Utility District and others. At those meetings another subject discussed was the possibility of New Melones Dam being constructed by the Bureau of Reclamation and the districts obtaining their needed water from that source. The Bureau of Reclamation representatives advised district officials that, due to the higher priority being given to other projects which would produce more water and power, the New Melones project would not be developed for at least 15 years and that the districts should, if they wanted additional water now, proceed with their own development.

The directors of both districts have no alternative but to proceed with the plan to sell the entire electric-power output at a firm figure to a financially sound private agency as a means of making the Tri-Dam project a self-supporting and financially solvent undertaking.

With that, the subcommittee will meet shortly and take action.

(Whereupon, at 12:05 p. m., the committee recessed subject to call.)

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